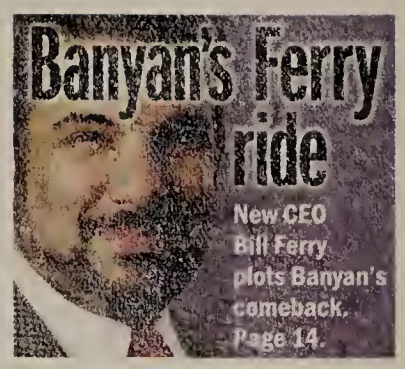
JUNE 23, 1997 VOLUME 14, NUMBER 25

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



Bay, Rapid City CEOs talk up $155M deal

Q&A

Bay Networks, Inc. last week made it official, snapping up Gigabit Ethernet start-up Rapid City Communications for $155 million in stock (*NW*, June 9, page 1). The deal makes Rapid City CEO Joe Kennedy a rich man overnight. It also adds a wealth of hot technology to Bay's product portfolio and strengthens Bay CEO David House's bid to get his company back on track.

House and Kennedy discussed the deal with *Network World* Senior Editor Jodi Cohen.

Why did Bay choose Rapid City and not one of the other Gigabit Ethernet start-ups?

House: Rapid City is the only start-up with the performance and Layer 3 capabilities needed

See **Bay,** *page 77*

Cisco, HP tackle Web management

Cisco to let Web interface manage routers and switches.

By Jim Duffy
Anaheim, Calif.

Cisco Systems, Inc. next month will ship a suite of Web-based device management applications that, for the first time, will let users administer networks of Cisco routers and switches from a Web browser.

Called Cisco Resource Manager (CRM), the suite includes applications that will let users track everything from device inventory to software configurations.

CRM also will analyze Internetwork Operating System (IOS) event messages generated by network devices, said John McCormack, senior software engineer at Cisco. McCormack previewed CRM at last week's OpenView Forum user group meeting here.

CRM will share data with Hewlett-Packard Co.'s OpenView management platform, letting OpenView administrators have full view of the Cisco

See **CRM,** *page 76*

Hewlett-Packard introduces Web server manager, but customers want more.

By Jim Duffy
Anaheim, Calif.

Hewlett-Packard Co. last week announced a product for managing corporate Web servers, the first part of a plan to bring Java and other Internet technologies into the OpenView fold.

The company's Internet Service Manager, introduced at the OpenView Forum user conference here, will let customers track the performance of Windows NT- and Unix-based Web servers as well as let them manage firewalls and audit HTML links.

HP also used its conference to emphasize its plans for OpenView to monitor service levels across corporate networks.

See **HP,** *page 76*

PHOTOS: CHRISTINE FINDLAY

A token gesture?

By Jodi Cohen

At a special summit, vendors agree to cooperate on a high-speed token-ring option. But now comes the hard part ...

Can token-ring vendors work together to ease customers' migration to high-speed backbone networks?

The answer appears to be "yes" after last week's daylong summit of the leading token-ring suppliers, including IBM,

See **Summit,** *page 16*

Summit participants (top) discuss token-ring migration options; IBM's Michael Taddei (left) touts token ring.

Get more info online:

- **Two analyses of what vendors have to do to make Web-based management work**
- **A copy of our 1997 Network Management Survey**
- **An overview of the Web-based Enterprise Management initiative**

Barter your way to cheaper IP telephony

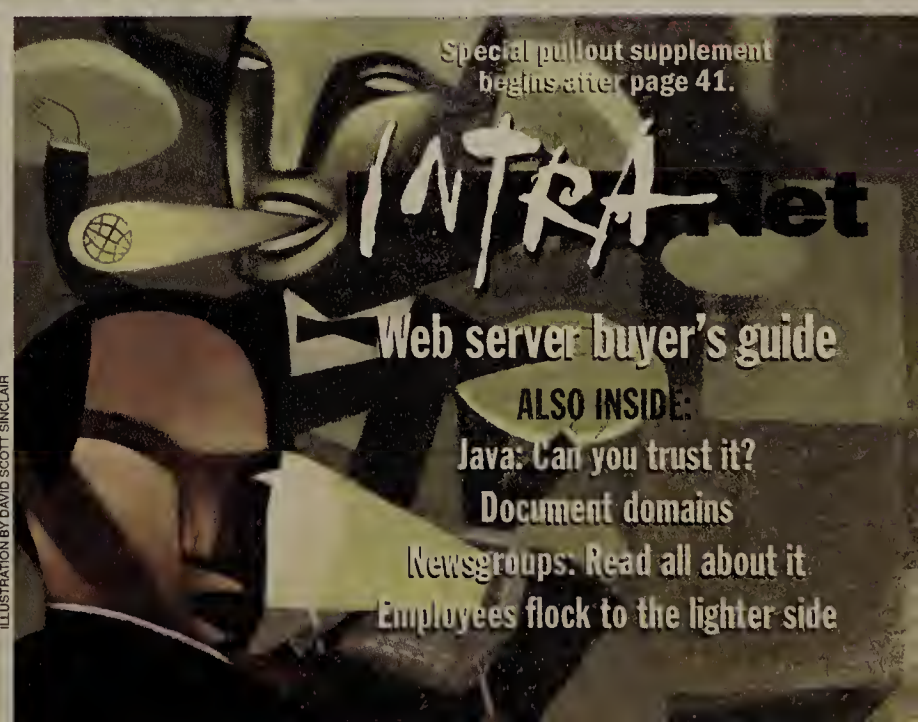
By Chris Nerney
North York, Ont.

Mix the world's oldest form of commerce with a new way to connect the Internet to the public phone system, and what do you have?

Virtually free, global long-distance calling, according to a Canadian firm that has developed a bartering system for customers who use its gateway product to deliver phone calls via the 'Net.

Array Telecom, Inc.'s Windows NT-based Telegate software automates the process of locating and sharing Array customer gateways around the world. These devices enable calls origi-

See **Array,** *page 77*



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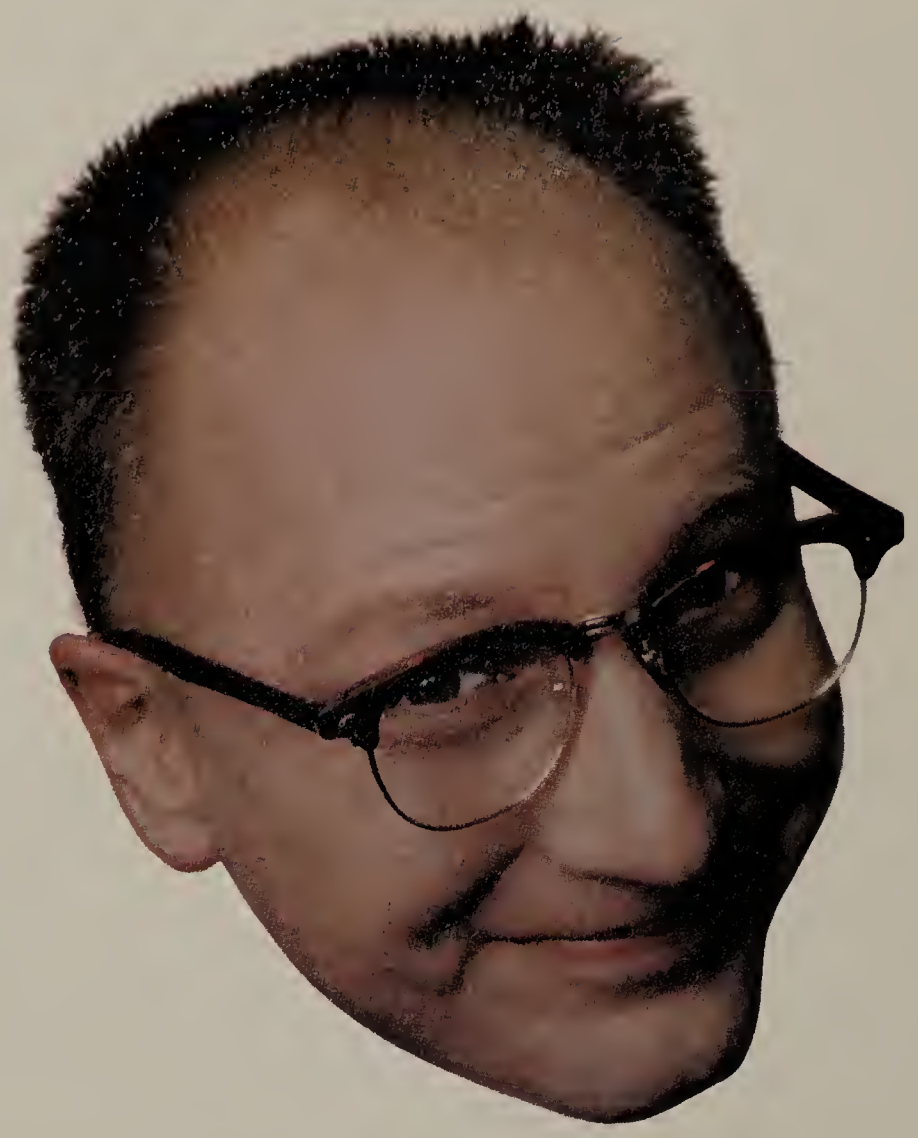

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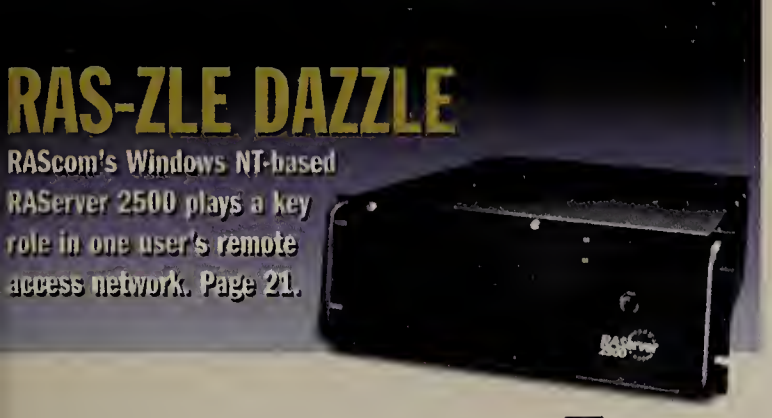

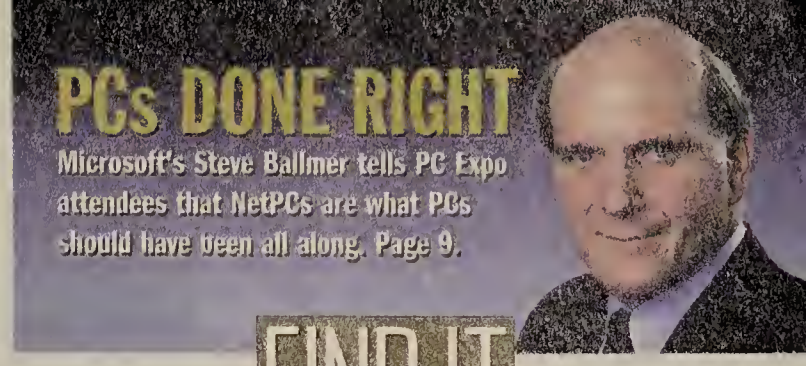

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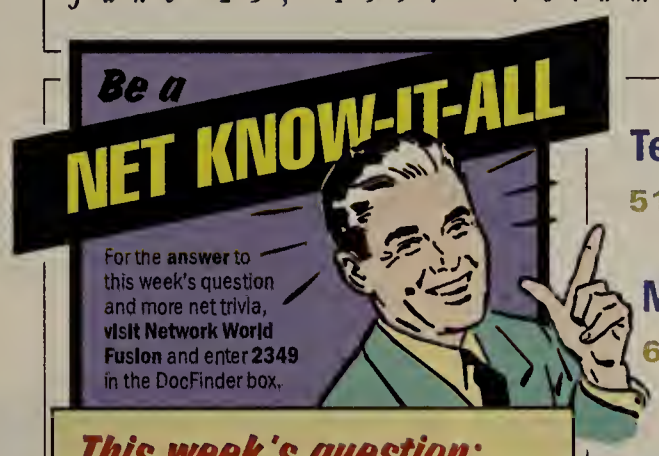

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SPECIAL FOCUS

Internet Protocols

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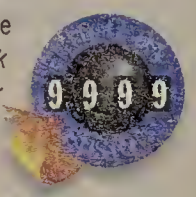

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This Week

Only on Fusion

Gigabit Ethernet. Find out why everybody's talking about this Ethernet for the next millennium. Listen to an audio primer that explains the technology and where it is use is appropriate; then follow our links for more information. **DocFinder: 2245**

IPv6. After you've listened to our Gigabit Ethernet primer, tune in for an audio overview of the next-generation Internet Protocol. We explain how it works and why it may not come as soon as predicted. You can also listen to primers on a variety of other technologies, from ADSL to frame relay. **DocFinder: 2245**

Databases. It's back to basics for Informix which last week said it will lay off 10% of its workforce as it begins to concentrate again on relational databases, instead of trying to branch out into object-oriented databases. **DocFinder: 2627**

Security. Hackers have finally broken 56-bit DES the encryption standard now used for protecting banking and other sensitive information – using the Internet and some distributed-computing techniques. **DocFinder: 2628**

Management. Marimba is best known as a push vendor but CEO Kim Polese last week said the company's Java-based technology positions it as a player in the application-management field, as well. **DocFinder: 2629**

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News briefs, June 23, 1997

Just the fax from PSINet

PSINet, Inc., of Herndon, Va., this week plans to announce global availability of its InternetPaper faxing service, which had been confined to the U.S. since its introduction in December. InternetPaper, based on NetCentric Corp. POPware servers, lets users send faxes from their desktops to fax machines around the world.

The fax transmissions are encrypted using Secure Sockets Layer technology and sent over PSINet's network, never traveling over the public Internet, said Tony Kelly, director of marketing at PSINet.

In some far-off locations such as Iceland and Togo, faxes are sent to the furthest point on PSINet's network and dumped onto the public telephone network. The initial setup fee is $100; usage charges range from 22 cents to about $1.50 per minute.

Hundt to AT&T: Don't even think about it

Outgoing Federal Communications Commission Chairman Reed Hundt last week threw ice water on AT&T's rumored plans to merge with SBC Communications or another regional Bell operating company, calling such a combination "unthinkable."

Hundt

Such a deal would result in 80% of overall telecom service dollars spent in a given region going to the same carrier, Hundt said.

AT&T Chairman Robert Allen recently claimed such a union could force the merging RBOC to give up monopoly habits that thwart potential competitors.

The old Ethernet slash-and-burn

Start-up Acacia Networks, Inc. last week announced price cuts of up to 50% across its entire line of Ethernet, Fast Ethernet and Gigabit Ethernet LAN switches.

Gigabit Ethernet pricing will drop to $1,495 per port, which is about half the cost of competitors' 1G bit/sec Ethernet offerings. Autosensing Fast Ethernet switches will hover around $350, while desktop Ethernet switch prices will fall to less than $100 per port.

Microsoft, Netscape get on same page

Microsoft Corp. and Netscape Communications Corp. last week formally agreed to support a Web Interoperability Pledge. The pledge calls for the companies to back all World Wide Web Consortium recommendations and submit all new tags to the W3C before shipping them in new products.

Gateway grabs server supplier for $194M

PC and laptop supplier Gateway 2000, Inc. last week said it has agreed to buy Advanced Logic Research, Inc. (ALR) of Irvine, Calif., in a deal worth $194 million. The acquisition provides North Sioux City, S.D.-based Gateway with a more complete product portfolio that now includes ALR's line of servers based on Intel Corp. processors.

"Adding a server offering to our product line ... [is] a natural extension of our push into the corporate market," said Ted Waitt, Gateway's chairman and CEO.

Corel, Netscape in browser talks

Corel Corp. plans to build a Java browser into its Office for Java suite, due later this year. Corel CEO Michael Cowpland said the company is talking with Netscape Communications Corp. about jointly developing a more full-featured offering than the HotJava browser from Sun Microsystems, Inc. that is currently on the market.

Netscape announced plans earlier this month to release a Java-based version of its Communicator browser/groupware client in 1998. Corel already has worked to incorporate various elements of Netscape's recently released Communicator browser/groupware client into its WordPerfect Suite 8.

Vendors urged to push ahead on ADSL

Summit attendees recognize high-speed technology's shortcomings but are still behind it.

By Tim Greene
Boston

Local phone companies and Internet service providers still are not ready to deploy asymmetric digital subscriber line (ADSL) services on a large scale. It is difficult to reach many potential customers with such services, and crosstalk among ADSL and other services is a concern.

Despite these shortcomings, interest in the high-speed access technology is high and rising.

Last week's ADSL Summit here attracted more than 400 attendees, about one-third more than attended the ADSL Forum's summit held last year in Amsterdam. Attendees mainly included representatives from hardware vendors and service providers, including some that have yet to make ADSL announcements.

The summit's official business included private working group meetings focused on standards proposals for running packet traffic over ADSL and developing an interface for SNMP control of ADSL devices.

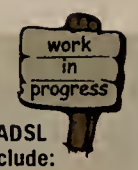
But some of the more interesting information came from a public panel discussion at the summit.

Forum Chairman Hans-Erhard Reiter urged forum members to keep the focus of their work on ADSL, not other DSL technologies.

While ADSL can support transmission speeds up to 9M bit/sec in one direction and 1M bit/sec in the other, there are slower technologies such as high-bit-rate DSL, single-pair HDSL and ISDN-based DSL. These slower technologies, ranging in speed from 129K bit/sec to 1M bit/sec, are the first being deployed by most carriers because the services are more mature and put less demand on carrier networks.

The high speeds of ADSL are what users want, said panelist Jim Goetz, director of telecommunications and media for IBM Global Network Systems. Less than 1.5M bit/sec is too slow for the corporate users who are likely to want ADSL service and are willing to pay for it.

ADSL: A WORK IN PROGRESS



The ADSL Forum lists four major areas in which vendors must improve before ADSL services become widespread. These include:

- Easing equipment deployment
- Delivering management and billing capabilities
- Navigating among multivendor services
- Establishing fair pricing schemes

One Wall Street analyst on the panel took the presence of heavyweights such as Cisco Systems, Inc., Lucent Technologies, Inc., Northern Telecom, Inc. and 3Com Corp. at the summit as a good sign. This likely means that service providers will get the ADSL hardware they need to roll out attractively priced services, said Chris Crespi, an analyst with Alex. Brown & Sons, Inc.

Despite demand for high-speed DSL service, some panelists said lower speed services should be plentiful, too. Service providers are aiming these services at residential markets, where the highest speeds are not necessarily required, said Bobbi Murphy, senior telecom analyst for Dataquest, Inc. in San Jose, Calif. She warned that prices may be higher than first predicted. ■

Motorola net challenges Teledesic

By Joanne Taaffe
Paris

Motorola, Inc. last week confirmed that it plans to build a network of low-orbit and geosynchronous satellites to provide high-speed data and video to telecommunications operators, corporate users and broadcasters.

While declining to confirm the exact investment amount, Motorola said it is devoting a "significant" sum to the satellite network, called Celestri.

Motorola's satellite network will rely on a mix of 63 low earth orbit (LEO) satellites and one or more geosynchronous satellites that move at the same speed as the earth.

This mix will deliver data at rates that range from 64K bit/sec to 155M bit/sec, a Motorola official said.

Motorola plans to launch its first satellite in 2001 so service can start in 2002. This falls within the same launch time frame as two competing LEO systems: Teledesic Corp.'s Teledesic Network and Skybridge, from Alcatel Alsthom SA. Both are designed to use LEO satellites to offer broadband Internet access, videoconferencing and interactive multimedia.

Alcatel has been seeking investment for its 64-LEO satellite system from Loral Space and Communications, Ltd.

Celestri will be Motorola's third satellite system.

Taaffe is a correspondent for IDG News Service's Paris bureau. Jeanette Borzo in Paris contributed to this story.

Ex-Novell execs find new homes

By Elizabeth Heichler

Two former high-ranking executives of Novell, Inc. have found new jobs, their new employers announced last week.

Robert Frankenberg, who left the CEO slot of the Orem, Utah, network software firm last August, has signed on as president and CEO of Encanto Networks, Inc.

Joe Marengi, whose resignation as Novell's president and chief operating officer becomes effective June 30, has signed on as senior vice president of Dell Computer Corp.'s relationship group.

Frankenberg's new home, Encanto, is a start-up based in Santa Clara, Calif. The company is developing a Java-based Internet consumer electronic appliance for small retailers, home offices and individuals.

At Dell, Marengi will report to the senior vice president and general manager of Dell Americas and be responsible for units serving large corporate and mid-size business customers. He left Novell in the wake of Eric Schmidt's hiring as CEO.

Heichler is IDG News Service's managing editor in Boston.

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1 What is the principal business activity at your location? (check one only)

01. ☐ Manufacturing (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Health Care Services
05. ☐ Hospitality/Entertainment/Recreation
06. ☐ Media/TV/Cable/Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities
10. ☐ Education
11. ☐ Process Industries (Mining/Construction/ Petroleum Refining/Agriculture/Forestry)
12. ☐ Government (Federal/State/Local)
13. ☐ Military
14. ☐ Aerospace
15. ☐ Consulting (Independent)*
16. ☐ Carriers/Interconnects
17. ☐ Internet Service Provider (ISP)
18. ☐ Manufacturing (Computer/Communications/OEM)
19. ☐ Resellers of Computer/Network Products (VARs, VADs)
20. ☐ Systems/Network Integrators*
21. ☐ Distributors (Computer/Communications)*
22. ☐ Other *(please specify)*_____

Please complete form based on largest client.

2 What is your job function? (check one only)

NETWORK IS MANAGEMENT:

1. ☐ Network Management
2. ☐ LAN Management
3. ☐ Datacom/Telecom Management
4. ☐ IS, IT, MIS, CIO, Systems Management
5. ☐ Internet/Intranet Management/Webmaster
6. ☐ Engineering Management
7. ☐ Corporate Management (CEO, Pres., VP, Dir., Mgr., Financial Management)
8. ☐ Consultant (Independent)
9. ☐ Other *(please specify)*_____

3 What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of? (Please **print** the appropriate **number code** in the box next to each product category. Please complete ALL categories A-M.)

1. $50 Million or more
2. $25 Million to $49.9 Million
3. $10 to $24.9 Million
4. $1 to $9.9 Million
5. $100,000 to $999,999
6. $50,000 to $99,999
7. Under $50,000
8. None of the above

A ☐ Large Systems *(Mainframes/Minis)*
B ☐ Desktops *(Micros/Laptops/Workstations)*
C ☐ Servers
D ☐ LANs
E ☐ WAN Equipment
F ☐ Carrier Services
G ☐ Internetworking
H ☐ Internet
I ☐ Intranet
J ☐ Remote Access
K ☐ Peripherals
L ☐ Software
M ☐ Service/Support

4 What is the total number of sites for which you have purchase influence? (check one only)

1. ☐ 100+ 2. ☐ 50 - 99 3. ☐ 20 - 49 4. ☐ 10 - 19 5. ☐ 2 - 9 6. ☐ 1 7. ☐ None

5 What is the total number of Servers/Clients/LANs installed/planned at your location/in your entire organization? (Check one box in each column)

	SERVERS		CLIENTS		LANS	
	At Location (A)	Entire Org. (B)	At Location (C)	Entire Org. (D)	At Location (E)	Entire Org. (F)
1.	50,000+		50,000+		50,000+	
2.	10,000 to 49,999		10,000 to 49,999		10,000 to 49,999	
3.	1,000 to 9,999		1,000 to 9,999		1,000 to 9,999	
4.	100 to 999		100 to 999		100 to 999	
5.	50 to 99		50 to 99		50 to 99	
6.	10 to 49		10 to 49		10 to 49	
7.	1 to 9		1 to 9		1 to 9	
8.	none		none		none	

6 What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check one only)
1. ☐ Corporate/Enterprise
2. ☐ Department
3. ☐ None

B. Involvement (check ALL that apply)
1. ☐ Create Network Strategy
2. ☐ Recommend/Specify
3. ☐ Approve
4. ☐ Evaluate
5. ☐ Determine the need
6. ☐ None

7 What is the estimated number of employees at your location/in entire organization? (check one in each section)

A. At your location:
1. ☐ Over 20,000
2. ☐ 10,000 - 19,999
3. ☐ 5,000 - 9,999
4. ☐ 2,500 - 4,999
5. ☐ 1,000 - 2,499
6. ☐ 500 - 999
7. ☐ 499 or less

B. Entire organization:
1. ☐ Over 20,000
2. ☐ 10,000 - 19,999
3. ☐ 5,000 - 9,999
4. ☐ 2,500 - 4,999
5. ☐ 1,000 - 2,499
6. ☐ 500 - 999
7. ☐ 499 or less

8 Please indicate the products/services that you are currently involved in purchasing or plan to purchase: (Check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

INTERNET/INTRANET

A	B		
☐	☐	01.	Internet Services
☐	☐	02.	Firewalls/Security/Encryption
☐	☐	03.	Internet Web Servers
☐	☐	04.	Intranet Web Servers
☐	☐	05.	TCP/IP Software
☐	☐	06.	Management/Monitoring Software
☐	☐	07.	Push Technology
☐	☐	08.	Web Browsers
☐	☐	09.	Intranet Applications/Groupware
☐	☐	10.	Search/Retrieval Products (web crawler)
☐	☐	11.	Internet Development Tools (JAVA, ActiveX, etc.)
☐	☐	12.	Electronic Commerce Tools
☐	☐	13.	Internet Telephony

LOCAL-AREA NETWORKS

A	B		
☐	☐	14.	Local-Area Networks
☐	☐	15	Network Operating System Software
☐	☐	16.	Servers
☐	☐	17.	Print Servers
☐	☐	18.	ATM Switches
☐	☐	19.	Token-Ring Switches
☐	☐	20.	Ethernet Switches
☐	☐	21.	Fast Ethernet
☐	☐	22.	Gigabit Ethernet
☐	☐	23.	IP Switches
☐	☐	24.	LAN Storage/Backup
☐	☐	25.	Optical LAN Storage/Backup
☐	☐	26.	Disk LAN Storage/Backup
☐	☐	27.	Tape LAN Storage/Backup
☐	☐	28.	RAID LAN Storage/Backup
☐	☐	29.	Network Test/Diagnostic Tools
☐	☐	30.	Cables, Connectors, Baluns
☐	☐	31.	UPS
☐	☐	32.	Network Interface Cards
☐	☐	33.	SNMP Network Management

INTERNETWORKING

A	B		
☐	☐	34.	Routers
☐	☐	35.	Hubs
☐	☐	36.	Intelligent Hubs
☐	☐	37.	Stackable Hubs
☐	☐	38.	Bridge/Router
☐	☐	39.	Bridges
☐	☐	40.	Gateways
☐	☐	41.	Concentrators/Repeaters

COMPUTERS/PERIPHERALS

A	B		
☐	☐	42.	Network Computers
☐	☐	43	Laptops/Notebooks/Sub-Notebooks
☐	☐	44.	Micros/PCs
☐	☐	45.	Minis
☐	☐	46.	Mainframes
☐	☐	47.	Workstations
☐	☐	48.	Printers/Network Printers
☐	☐	49.	CD-ROM
☐	☐	50.	Fax/Modem Boards
☐	☐	51.	Graphics/Multimedia/Audio/Video Boards
☐	☐	52.	Memory/Chips/Boards/Cards

REMOTE/WIRELESS COMPUTING

A	B		
☐	☐	53.	Remote Access Products
☐	☐	54.	Remote Access Services
☐	☐	55.	PDAs
☐	☐	56.	PCMCIA Devices
☐	☐	57.	Wireless Data Services
☐	☐	58.	Wireless Data Equipment
☐	☐	59.	Cellular Equipment & Services

SOFTWARE/APPLICATIONS

A	B		
☐	☐	60.	Network Management
☐	☐	61.	Systems Management
☐	☐	62.	Security
☐	☐	63.	Communications Software
☐	☐	64.	Terminal Emulation
☐	☐	65.	Operating Systems
☐	☐	66.	Applications Development Tools
☐	☐	67.	Database Management/RDBMS
☐	☐	68.	Groupware
☐	☐	69.	Workflow
☐	☐	70.	EDI
☐	☐	71.	E-mail
☐	☐	72.	Desktop Video Conferencing
☐	☐	73.	Imaging
☐	☐	74.	Suites/Server Suites (Back Office, etc.)
☐	☐	75.	Middleware
☐	☐	76.	Document Management
☐	☐	77.	Site Metering Tools
☐	☐	78.	Computer Telephony Integration (CTI)
☐	☐	79.	Data Warehousing

WIDE-AREA NETWORK EQUIPMENT & SERVICES

A	B		
☐	☐	80.	Modems
☐	☐	81.	Asynchronous Transfer Mode (ATM)
☐	☐	82.	Frame Relay Equipment/Services
☐	☐	83.	ISDN Equipment & Services
☐	☐	84.	FT-1/T-1/T-3 Multiplexers/Services
☐	☐	85.	DSL Services/Products
☐	☐	86.	SONET
☐	☐	87.	Inverse Multiplexers
☐	☐	88.	SMDS
☐	☐	89.	Diagnostic/Test Equipment
☐	☐	90.	DSU/CSU
☐	☐	91.	VSAT/Satellite
☐	☐	92.	PBXs
☐	☐	93.	Voice Mail/Response
☐	☐	94.	Videoconferencing
☐	☐	95.	Leased Lines
☐	☐	96.	Switched Data
☐	☐	97.	Virtual Networks
☐	☐	98.	Outsourcing/Systems Integration Services
☐	☐	99.	Education/Training Services

☐ 00. ☐ None of the above (1 - 99)

9 Please indicate the platforms that are currently installed/planned:

(Check ALL that apply) A. Currently installed B. Planned for purchase

NETWORK PROTOCOLS

A	B		
☐	☐	01.	TCP/IP
☐	☐	02.	IPv6
☐	☐	03.	SNA
☐	☐	04.	OECnet
☐	☐	05.	Novell IPX/SPX
☐	☐	06.	APPC/APPN/LU 6.2
☐	☐	07.	NETBIOS
☐	☐	08.	AppleTalk
☐	☐	09.	NFS
☐	☐	10.	Other *(please specify)*_____

LAN ENVIRONMENT

A	B		
☐	☐	11.	Gigabit Ethernet
☐	☐	12.	Switched Ethernet
☐	☐	13.	Fast Ethernet (100 Megabit Ethernet)
☐	☐	14.	Ethernet
☐	☐	15.	ATM
☐	☐	16.	Token Ring/Token Ring Switching
☐	☐	17.	IP Switching
☐	☐	18.	FDDI
☐	☐	19.	100Base-T
☐	☐	20.	10Base-T
☐	☐	21.	LocalTalk
☐	☐	22.	Fibre Channel
☐	☐	23.	100vg Any LAN
☐	☐	24.	Other *(please specify)*_____

NETWORK OPERATING SYSTEM

A	B		
☐	☐	25.	Windows NT
☐	☐	26.	Windows NT/Advanced Server
☐	☐	27.	Novell IntranetWare
☐	☐	28.	Novell (NetWare 4.X)
☐	☐	29.	Novell (NetWare 2.X, 3.X)
☐	☐	30.	Microsoft (LAN Manager)
☐	☐	31.	LocalTalk (AppleTalk)
☐	☐	32.	Banyan (VINES)
☐	☐	33.	IBM (LAN Server)
☐	☐	34.	Artisoft (LANtastic)
☐	☐	35.	Other *(please specify)*_____

COMPUTER OPERATING SYSTEM

A	B		
☐	☐	36.	NT Server
☐	☐	37.	NT Workstation
☐	☐	38.	Unix/Xenix/AIX
☐	☐	39.	Solaris
☐	☐	40.	Windows
☐	☐	41.	Windows 95
☐	☐	42.	Windows 97
☐	☐	43.	DOS
☐	☐	44.	OS/2/OS/2 Warp
☐	☐	45.	IBM MVS/VM/VSE
☐	☐	46.	Digital VMS
☐	☐	47.	Macintosh
☐	☐	48.	Other *(please specify)*_____

☐ 49. ☐ None of the above (1-48)

10 Which of the following Servers/Clients do you have installed/planned at your location? (check ALL that apply in each column)

		A. Servers	B. Clients			A. Servers	B. Clients
01.	Power PC	☐	☐	07.	486	☐	☐
02.	Power Mac	☐	☐	08.	386	☐	☐
03.	Mac Other	☐	☐	09.	286	☐	☐
04.	Multiprocessor Servers	☐	☐	10.	Risc	☐	☐
05.	P6/PII	☐	☐	11.	Alpha	☐	☐
06.	Pentium/Pentium Pro	☐	☐	12.	Other	☐	☐

11 Which of the following hardware platforms are installed/planned in your company? (check ALL that apply)

A - Mainframes (Large Scale) Installed/Planned
1. ☐ IBM
2. ☐ Amdahl
3. ☐ Cray
4. ☐ Hitachi
5. ☐ Unisys
6. ☐ Other _____

B - Minis (Midrange) Installed/Planned
1. ☐ IBM RS6000
2. ☐ IBM AS400
3. ☐ Digital
4. ☐ Tandem
5. ☐ Unisys
6. ☐ AT&T GIS
7. ☐ H-P
8. ☐ Oata General
9. ☐ Other _____

C - Workstations Installed/Planned
1. ☐ Sun Microsystems
2. ☐ Silicon Graphics
3. ☐ Digital
4. ☐ H-P
5. ☐ IBM
6. ☐ Other _____

12 What is the estimated gross annual revenue of your entire company/ institution? (check one only)

01. ☐ $20 billion or more
02. ☐ $10 billion to $19.9 billion
03. ☐ $1 billion to $9.9 billion
04. ☐ $500 million to $999.9 million
05. ☐ $100 million to $499.9 million
06. ☐ $50 million to $99.9 million
07. ☐ $10 million to $49.9 million
08. ☐ $5 million to $9.9 million
09. ☐ $4.9 million or less
10. ☐ None of the above

13 For which areas outside of North America do you have purchase influence? (check ALL that apply)

1. ☐ Europe 2. ☐ Asia 3. ☐ South America 4. ☐ Australia 5. ☐ Middle East 6. ☐ None

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Users find a lot to like in new NetPCs

By John Cox
New York

Users last week found a lot to like at the big NetPC blast at PC Expo.

A dozen vendors, including Acer American Corp., Compaq Computer Corp., Dell Computer Corp., Hewlett-Packard Co. and IBM, demonstrated prototype NetPCs using Intel Pentium or Pentium II processors, an internal hard drive and 16M to 32M bytes of memory.

Some had sophisticated caching or built-in graphics subsystems. IBM included software that lets its product be turned on remotely over the network; this remote access makes it possible to load software onto the NetPC without a human present, wherever it is.

Most of the NetPC products will starting shipping this fall. None of the vendors announced prices. But with their memory capacities and class of processors, the NetPCs, even lacking a floppy or CD-ROM drive, are likely to cost around $1,300, according to several estimates by vendors and analysts.

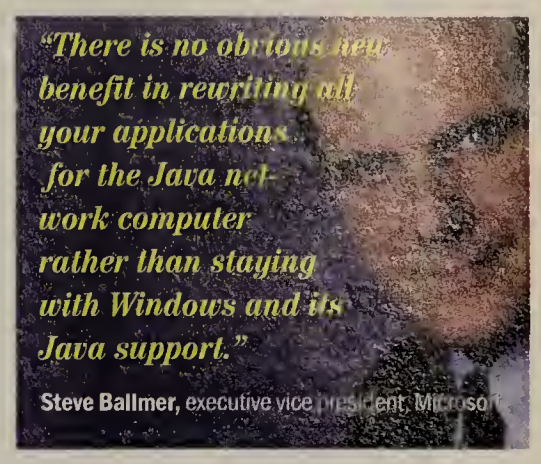
Besides checking out the new machines on the show floor, attendees also heard Steve Ballmer, an executive vice president at Microsoft Corp., acknowledge that the NetPC was simply a "PC that's been done right," with new interfaces and protocols so it can be managed and monitored centrally across a network.

Ballmer said key elements of the NetPC are the new management features being added to NT 5.0. NT 5.0 will begin beta-testing this fall and will ship by mid-1998.

The NetPC is just one of a number of different Windows clients that Microsoft now plans to offer, Ballmer said. Windows CE, a subset of the Windows operating system, designed for handheld and similar small devices, has proved to be unexpectedly strong, with some 3,000 software developers building applications for it, according to Ballmer.

NetPCs are expected to be much less expensive in administrative and supports costs, and that is why most MIS groups welcome them.

"I love the [NetPCs'] focus on manageability," said Gary Galunas, director of client/server architecture for discount giant Kmart Corp. of Troy, Mich., which has just received some NetPC prototypes for testing. Today, Kmart has some 5,000 PCs. NetPCs should be muc easier to support and upgrade with new software, according to Galunas.



Based on a pilot test using 10 NetPCs, Pennzoil Co. anticipates replacing "well over 80%" of about 4,000 PCs with the new devices over several years, according to Britt Mayo, director of information technology at the company. Pennzoil leases all its desktops, and the PCs conform to strict hardware and software standard configurations. During the pilot test, Pennzoil found substantial support savings because fewer problems were called in by users.

The problems themselves were not as difficult or complicated because of the carefully defined and controlled configuration. Hardware problems could be fixed by simply replacing the entire desktop, remotely reconfiguring it and downloading the needed software.

At Prudential HealthCare, the HMO arm of Prudential Insurance Co. of America, based in Roseland, N.J., NetPCs will be suitable for a narrower range of users, according to Myles Trachtenberg, the company's CIO. The company tested 10 Pentium II NetPCs in a mission-critical application: the customer support group.

Trachtenberg said it took half as much time to set up a NetPC as it would a regular PC. The devices also made it easier to instantly download software to customer service representatives. These benefits were realized without any changes to existing applications.

Prudential HealthCare is considering rolling out the NetPCs in four large national service centers. ■

Despite ISP efforts, spam remains one tough cookie

What are ISPs doing to ward off bulk e-mail attacks?

By Denise Pappalardo

When it comes to fighting spam, Internet service providers have their hands full. In one hand are policies to discourage e-mail abuse; in the other, filtering software, such as that introduced this week by Software.com, Inc.

Smaller ISPs have the fewest resources, which is one reason the Santa Barbara, Calif.-based company is rolling out its Post.Office server.

This product is aimed at small-to-midsize ISPs. It includes filtering techniques that block Simple Mail Transfer Protocol connections from specified IP addresses and messages based on specific senders' return e-mail addresses.

The company already supports antispamming filtering on its Intermail e-mail server, which is designed for ISPs supporting thousands of users.

Spam, velveeta and spam

Spam — annoying, unsolicited commercial e-mail, and its bothersome sister, "velveeta," inappropriate postings to users and newsgroups — may not seem like they could hurt an ISP, but in fact, they can.

ISPs are concerned their reputations and quality of service will be damaged if such practices continue. And well they should be, argued Mark Levitt, electronic messaging research manager at International Data Corp., a Framingham, Mass.-based consulting firm. Spam sometimes appears as if it comes directly from an ISP, fooling the recipient, he said.

Spam, policies and spam

Most ISPs have developed terms and conditions of service that users agree to before their service is turned on. These policies typically contain antispamming rules. For instance, if a user sends out e-mail to more than a certain number of users or posts articles on a get-rich-quick scheme to several newsgroups, the user runs the risk of getting dropped.

And these rules get enforced, ISPs claim. Bellsouth.net, for instance, drops spammers from their services for a single offense, said Andrew Dietz, director of product management at the BellSouth Corp. ISP company.

Spam, spam, filtering and spam

In addition to policies, ISPs are using e-mail filtering tools to spot these processed-food named scoundrels. Some e-mail and security vendors are responding to spam problems with products that identify and filter out unwanted messages. For example, the IMail Server for Windows NT from Ipswitch, Inc., of Lexington, Mass., is designed to stop spammers from relaying their unsolicited e-mail through the servers of unsuspecting ISPs.

Bellsouth.net, BBN Planet, Genuity, Inc. and MCI Communications Corp. are just a handful of vendors that have developed their own proprietary filtering techniques. But is it enough? "Filtering is really a Band-Aid approach to spamming," said Paul Hoffman, director of the Internet Mail Consortium, in Santa Cruz, Calif., who also argues that filtering is not a deterrent.

Nor will it work. Educated and experienced spammers will be able to get through filtering, Hoffman said. "Unfortunately, we don't believe there is a technical fix to spamming today," he said. ■

ISPs WARDING OFF SPAM ATTACKS

One Web site (spam.abuse.net/spam/) that totes the tag line "Promote Responsible Net Commerce: Fight Spam!" lists 58 Internet service providers with "responsible" antispamming policies. Here is a sampling of those included on the list:

● America Online	● Microsoft Network
● Bellsouth.net Internet Services	● Mindspring Enterprises
● CAIS Internet	● Netcom On-Line Communication Services
● Digex	● Pacific Bell Internet Services
● Erols	● Prodigy
● GTE Internet Solutions	● Sprint
● MCI	● Ultranet Communications

NC software supports access to Windows applications

By John Cox
King of Prussia, Pa.

Network computer vendor HDS Network Systems, Inc. plans to release a new version of its NC operating system, with changes that make it easier for users to connect to Windows application servers.

The new version of the software, called netOS for Windows Terminals, is stored on any server that supports a File Transfer Protocol. NetOS downloads to network computers and runs Java applets. Via 3270 terminal emulators and X Windows software, netOS also connects to mainframe and Unix applications.

The new release, previewed at PC Expo and due in July, will include the International Communications Association protocol licensed from Citrix Systems, Inc., which sets up a communications link between the netOS client on the NC and a Citrix WinFrame server, where the Windows applications run.

"The NC needs to run Java," said Michael Kantrowitz, executive vice president for HDS, of King of Prussia, Pa. "But it has to do everything a PC can do, also."

HDS will run netOS on its own @workStation NC product. The company will license the software to hardware vendors and OEMs that can use it to create an array of thin-client devices to access Windows applications.

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Lotus edges closer to Kona applets delivery

Company insists plan for September shipment of Java applets is on track.

By Paul McNamara
Cambridge, Mass.

Five months after announcing plans for a set of Java-based productivity applets code-named Kona, Lotus Development Corp. is scrambling to get the software into beta tests to make good on a promised end-of-summer delivery.

There is a palpable urgency surrounding Kona within Lotus, parent company IBM and companies planning to deploy Java-based network computers.

The Kona applets are important to Lotus in that the company has taken great pains to reposition itself as an Internet player. The 500K-byte JavaBeans can be embedded in applications based on Lotus' Domino Web application server or third-party Web offerings.

And Kona is key to IBM because the company is anxious to peddle its Network Station thin clients, which will only be as good as the applets that run on them. Planned Kona applets include a word processor, spreadsheets and presentation graphics.

Some customers can hardly wait. For example, the grocery store chain Hannaford Bros. Co. has already ordered 1,200 IBM Network Stations, in part because they will come equipped with Kona.

"Beyond replacing dumb terminals and PCs that only do e-mail, with [NCs running] Kona, we think we can start replacing 15% to 20% of our low-end PCs with Net Stations to give [users] basic word processing, spreadsheet and presentation capabilities," said Bill Homa, Hannaford's chief information officer.

There still may be doubts about the maturity of Java as a programming language and network computing in general, but Lotus claims its Kona Web site is getting more than a million hits per month, and 20,000 visitors have registered for demonstrations. Company officials insist the applets are on track for delivery by the end of September, although beta-testing has yet to begin, and there have been rumors of delays.

The Kona lineup

Java applets that Lotus plans to deliver by September:

- Spreadsheet
- Chart maker
- Word processor
- Presentation graphics tool
- Calendar and To-do
- Project scheduler
- SQL/JDBC data access
- E-mail client

"What's most exciting [about Kona], even outside of the whole Lotus world, is that there aren't a lot of JavaBeans that are commercially available," said Navin Mithel, senior consulting manager for Lante Corp., a New York-based consultancy.

Even delivery of Corel Corp.'s much anticipated Office for Java suite of desktop applications has been pushed back until October.

"Everyone talks about JavaBeans, but these [Kona applets] are very usable . . . even on Web servers that have nothing to do with Domino," Mithel said.

Lotus does, however, expect its existing customer base to embrace Kona first as a means to extend collaborative environments based on Notes or Domino to end users with NCs.

Lotus officials are mum on pricing, but said Kona applets will be packaged as a software developer's kit and a desktop applications suite.

The applets can be embedded into Web pages individually or tied together using Lotus' Infobus technology, which has been adopted by JavaSoft as a standard means of linking JavaBeans.

This would allow, for example, a user's spreadsheet entry to automatically update a corresponding chart.

"Right now there are two levels of Java," consisting of trivial animation and specialized high-end applications, Mithel said. "There's a huge gap in the middle and . . . with Kona, we will be able to bridge that gap."

Even among Kona enthusiasts, however, there are concerns about Java: Not every browser features a Java Virtual Machine, and on a more primary level, Java remains an immature programming language.

"Everyone has seen Java applets download and then not execute," Mithel said. "If you're doing a real business application, that can be a significant concern." ■

Lotus preps Domino starter pack

Lotus Development Corp. last week raised the curtain on Domino Intranet Starter Pack, a version of its flagship Domino Web application server designed for small businesses that may be short on IT expertise.

In addition to what Lotus calls an easier-to-install Domino server, the package includes Internet mail capabilities, 12 ready-to-run business applications and a five-seat Lotus Notes client license.

Applications include a document library, company forms bin, customer tracking, contact management and an employee directory.

Unveiled at PC Expo in New York, the Intranet Starter Pack — previously code-named Club Med — is expected to help Lotus expand the market for Domino (*NW*, June 16, page 16).

"Overall, Domino is a hot product — it was in '96 and is expected to be this year — and Lotus wants to be sure to hit all market segments," said Mark Levitt, an analyst with International Data Corp. in Framingham, Mass. "This [starter pack] should help Lotus reach those users who would not have considered Domino in the past" because it was too complex and costly to install, he said.

Scheduled to ship later this summer, the Domino Intranet Starter Pack is priced at $1,695.

In addition to the new Domino product, Lotus announced Instant!TEAMROOM, a rentable application for establishing virtual workgroups on the Web.

To use the service, a team leader first establishes a workroom by accessing a Lotus Web site (www.lotus.com/instant). The leader then chooses a host, enters credit card payment information and follows instructions for selecting a team room URL, user name and password. Additional team members need a PC running Netscape Communications Corp. Navigator 3.X to access the workroom, store documents, share ideas and track the status of a project.

Instant!TEAMROOM is hosted by Interliant, a Houston-based Lotus Internet service provider. It will also be available through Netcom On-Line Communication Services, Inc. within 30 days and from additional ISPs down the road. Prices are set by the ISPs and applied only when the workgroups are active.

Lotus is among a growing number of software vendors entering the rentable applications market. Others include Changepoint International Corp., of Toronto, with its Involv intranet service, and IntraActive, Inc., of Washington, D.C., which recently unveiled a new version of its InTandem group collaboration software.

—Paul McNamara

Application development

Microsoft blends Windows and Java via J/Direct

By Carol Silwa
Redmond, Wash.

Microsoft Corp. last week announced a new feature in its Java Virtual Machine (JVM) that will allow Java developers to gain direct access to the full range of Windows-based services.

Developers currently cannot write to the complete set of Win32 APIs from the Java language.

But through a new feature called J/Direct, to be included in an upcoming Microsoft Internet Explorer browser, they will not only be able to access Microsoft-developed Dynamic Link Libraries (DLL) but any third-party DLLs.

DLLs are blocks of prebuilt code that represent Windows services.

Not surprisingly, Sun Microsystems, Inc., the inventor of the Java language, reacted strongly to the Microsoft announcement.

"J/Direct is a piece of technology that is designed solely and specifically to defeat the cross-platform benefits of Java," said David Spenhoff, product marketing director in Sun's JavaSoft division. "And in fact, it's kind of a little bit of flypaper. So the honey looks good, and you land on the honey, and you're trapped. Write once, run on Windows."

Microsoft, on the other hand, said it is merely giving its developers a choice.

At present, without J/Direct, developers building Java applications have only two ways to get outside the JVM and access Win32 APIs.

These choices are:

- Raw Native Interface (RNI), which gives a developer full access to the API and DLLs. RNI is fast, but developers have to do a lot of work, said Microsoft group product manager Tom Johnston.
- Component Object Model (COM), in which Win32 services are represented by objects that can be linked to other objects on the client.

The disadvantage of this method is that only one-third of the Win32 services are available through COM, Johnston said.

"The problem with COM is that it requires the library that you're calling to be COM-enabled.

In many cases, that is not practical or feasible," said B.C. Krishna, vice president of technology for FutureTense, Inc., a software developer in Acton, Mass.

The new J/Direct feature will ship as part of Microsoft's Internet Explorer 4.0. A beta is due in four to six weeks. The final version is targeted for a summer release. ■

Microsoft's go arounds

Three ways to bypass the Java Virtual Machine and gain direct access to Win32 functionality:

- J/Direct – Gives access to all Win32 APIs and third-party APIs
- Component Object Model – Provides access to one-third of the Win32 APIs
- Raw Native Interface – Fast and comprehensive, but hard for developers to use

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Ferry looks to turn Banyan around

New CEO says directory-enabled applications are the key to company comeback.

Q&A

Bill Ferry knew the quagmire he was stepping into when he agreed to become Banyan Systems, Inc.'s president and CEO in February. It is no secret that the company has practically disappeared from the network operating system market, has been bleeding red ink for more than a year and has been fighting to keep even its most loyal customers. Last week, Ferry laid out his no-nonsense turnaround strategy for *Network World* News Director Bob Brown.

Taking a casual look at your resume, I'd think you were a glutton for punishment. You've been at Digital, Wang and now Banyan. Why Banyan?

Wang was one of Banyan's biggest resellers, so I was familiar with VINES and was able to get a feel from customers about how they felt about Banyan. The customers told me they loved the product, but they were a bit frustrated with the company, which they felt never reached its full potential. But my sense was that having a hot technology in StreetTalk for NT and a strong customer base were viable ingredients for making a successful turnaround.

When a successful company gets in trouble, my experience has been that the people who have been involved with the company over time tend to underestimate the severity of the problems. They tend to nibble at the problems, instead of taking a bite.

What's the turnaround plan?

First, we need to stabilize the company and understand where we're headed. We announced in April that we'd take 25% out of the cost structure, which meant cutting 20% to 22% of the workforce. The second phase is rejuvenating the business, which involves meeting with customers and giving employees incentives to buy into what we're doing. Only when those things happen can we get to the third phase, which is growing the business.

The StreetTalk directory service is clearly Banyan's strength. But can a company really make money selling directories?

Our revenue today comes about half from software and half from services. In software, the majority comes from StreetTalk for NT. Still, purely basing a business on selling a directory is a tough business model going forward. Fortunately, we have people skilled in not only building directories, but in using them. The challenge is to refocus them in a way that their skills get applied to building applications that [take advantage of] our directories.

When will we see some of these applications?

Switchboard [Banyan's Internet white and yellow pages] is something we built using our directory service as a foundation. We haven't given out any financial estimates to anyone yet, but I think we'll hit $1 million in revenue per quarter next year, and once we do that we'll approach a break-even business.

Switchboard is an example of the kind of directory-based application that we could offer to companies for their private networks, possibly to use as an internal phone or e-mail directory. Where I see the opportunity is to repackage and develop applications that build on the Internet, NT environment or whatever other infrastructure is in place. I wish I could tell you I had some of these new directory applications ready to ship, but I don't.

Is the Lightweight Directory Access Protocol (LDAP) good or bad for Banyan?

Some people are pitching LDAP as the solution to all problems, and it is not. But LDAP is good for us. It will allow us to build networks for customers that provide access to the many applications being built to the LDAP standard.

Also, we won't have to run around getting developers to use our tool kit to build to our directory as long as they write to LDAP.

Where are Banyan's research and development dollars going these days?

Although we are moving away from providing infrastructure, like NOSes, about 25% of the funds are devoted to keeping VINES and other existing products up to date. Another 50% to 60% goes toward building industry standards into products to help customers build corporate intranets. The rest is for more advanced development. That's a much different breakdown than we had 90 days ago. ■

Popular encryption code cracked

By Rebecca Sykes

An encryption code widely used by banks and companies to protect sensitive information from electronic bandits has been broken.

A group of programmers acting in concert over the Internet for the past few months broke the code, which is known as the Data Encryption Standard (DES) and was developed in 1977 by IBM.

Breaking the 56-bit code meant finding the one numerical combination, or key, out of 72 quadrillion possibilities, that could unlock the encrypted message.

Using software developed and made available over the 'Net by Rocke Verser, a contract programmer based in Loveland, Colo., programmers threw sets of millions of keys at the encrypted message. The system that unscrambled the message was powered by a Pentium 90 with 16M bytes of RAM, Verser said.

The comparatively modest technical capabilities of the winning machine underscores the inadequacy of 56-bit encryption, said Scott Schnell, vice president of marketing at RSA Data Security, Inc. RSA is the encryption company that in January offered a $10,000 reward to the first person to crack DES.

Neither Schnell nor Verser suggested that banks and other companies using DES have suddenly become vulnerable.

"The only thing that's different today than yesterday is today we've proved DES could be cracked, and yesterday there were only academic papers that said it could be done," Verser said. "I don't think we need to panic."

Sykes is a correspondent for the IDG News Service.

Foundry pitches pure Gigabit Ethernet switches

By Jodi Cohen

Sunnyvale, Calif.

Despite all their talk, most Gigabit Ethernet start-ups have yet to introduce all-Gigabit switches.

Foundry Networks, Inc. broke out of the pack last week with the rollout of a switch and switching router that can be outfitted with only Gigabit Ethernet links.

FOUNDRY'S TURBOIRON GIGABIT ETHERNET SWITCH

- Supports four 1G bit/sec Ethernet ports
- Provides two Fast or Gigabit Ethernet high-speed uplinks
- Supports as many as 32,000 media access control addresses
- Provides 2M bytes of buffering
- Supports 1,024 virtual LANs

Foundry is now in a class with Extreme Networks, Inc., which is the only other start-up to unveil pure Gigabit products, industry observers said. Most other companies only offer Fast Ethernet switches with one or two Gigabit Ethernet uplinks.

Foundry's new TurboIron switch offers four Gigabit Ethernet ports as well as two Fast or Gigabit Ethernet high-speed uplinks. The device can support as many as 32,000 media access control addresses and 2M bytes of buffering. The switch can support as many as 1,024 virtual LANs.

The switches can be used to build higher speed backbones that can carry traffic among workgroup and campus Fast Ethernet switches as well as relieve server congestion.

In addition, Foundry unveiled the TurboIron switching router, which also provides four Gigabit Ethernet ports and two Fast Ethernet or Gigabit Ethernet high-speed uplinks. The device is for routing IP and IPX traffic among workgroup and campus LANs at wire speed and can improve server access with dedicated 1G bit/sec links.

These are among the features that encouraged one current Bay Networks, Inc. customer to evaluate Foundry's gear.

"We're in the process of designing a new [800-node] campus network that will be built around Gigabit Ethernet," said Gary Pfeiffer, corporate manager of global IT infrastructure at Electroglas, Inc. in Santa Clara, Calif. "We'll put the corporate mail server, master file servers and backup devices on Gigabit, as well as the links between buildings, so we'll need some all-Gig devices to form our backbone."

Foundry also plans to roll out higher density versions of the TurboIron — eight- and 16-port all-Gigabit Ethernet switches and routers — later this year.

The TurboIron products build on Foundry's existing gear, including its FastIron switch and NetIron router, each with 10M/100M bit/sec Ethernet ports and Gigabit Ethernet uplinks.

Foundry's devices support the company's quality-of-service features and the IEEE 802.1q VLAN tagging scheme for extending VLANs across switches.

All of the products can be managed via Foundry's IronView Enterprise Management SNMP-based application, which sits atop Hewlett-Packard Co.'s OpenView platform.

Pricing for the TurboIron switch starts at $11,995, and the router starts at $15,995. Both will ship in July.

✆ Foundry: (408) 542-0835

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PROCOM TECHNOLOGY

Summit

Continued from page 1

3Com Corp., Cabletron Systems, Inc., Bay Networks, Inc. and Cisco Systems, Inc. At the Spring Lake, N.J., meeting, sponsored by The Tolly Group and *Network World*, vendors agreed to coordinate the development of technologies that let customers send native token-ring traffic over Fast and Gigabit Ethernet backbones.

That will be a big relief to token-ring users that don't want to upgrade to ATM. ATM was once viewed as the natural backbone path but is now seen by some customers as too costly and complex.

The summit, which also included Madge Networks, Inc., Olicom A/S and Texas Instruments, Inc., was aimed at exploring the future of token-ring in the enterprise. The participants said token-ring switching, advances in technology and lower prices for token-ring adapters and switch ports can keep token ring alive in corporate networks, but they acknowledge the LAN market belongs to Ethernet.

IBM's *Michael Taddei*

"It's tough for users to resist the temptation of free 10/100 Fast Ethernet on the motherboard," said Tom Jacobs, product manager of LAN switching at Bay. "Let's face it, the token-ring customer set — albeit large — is fixed and probably shrinking."

Diane Schmidt, product-line manager for token-ring adapters at 3Com, agreed and pointed out another reason buyers are reluctant to put desktops on token-ring LANs. "Customers are having trouble hiring people who know token-ring or want to learn it," she said. "Who's going to support those desktops?"

But pricing is the top issue. While token-ring prices may be falling — Bay last week vowed to bring the price of a desktop switch below $300 per port by mid-1998 — the technology remains considerably more expensive than Ethernet. Today, an Ethernet switch sells for as low as $100 per port.

Token ring may have some technically superior features compared to Ethernet, but "most customers don't think token ring is strategic," said Frank Hayes, senior program manager of LAN switching at Cabletron. "Beta was better than VHS, but economics will win out in this market, too."

3Com's *Diane Schmidt*

The need for speed

If new desktops are lost to Ethernet, token ring's role is diminished throughout the network. "If the desktop is changed, then everything up the food chain is affected," said Kevin Tolly, president and CEO of The Tolly Group, a Manasquan, N.J.-based consultancy.

Summit attendees said a key concern is providing ongoing support and new features for existing customers, as well as tools that help them migrate to higher-speed networks. Chief among those features are new server and switch-to-switch links to provide more capacity to current token-ring users.

"There's no question that there's a need for increased bandwidth at the server," said Michael Taddei, worldwide manager of LAN switching product marketing in IBM's Networking Hardware Division. "We need multiple full-duplex connections to a server and load balancing." But will full-duplex token ring, which provides a bidirectional speed of 32M bit/sec, be enough?

Not likely. And that's where the battle over the backbone comes back in. Some vendors, such as Madge, say ATM is the answer and that emerging high-speed token-ring alternatives only lead customers into proprietary dead ends. But other vendors said a high-speed token ring alternative is needed for customers who don't want ATM.

Bay's *Tom Jacobs*

ATM anyone?

Although it may have been risky to bet your backbone on ATM a couple years ago, the technology has matur-ed, important ATM standards have been adopted and switch and adapter prices have dropped.

In fact, all of the participants agreed that ATM is a viable, multivendor, standards-based approach for higher bandwidth. Now that a key piece of ATM — LAN Emulation support for token ring and Ethernet — is here, ATM can be used to provide high-speed server connections as well as a means to integrate token-ring and Ethernet LANs.

Bay and Madge believe so strongly in ATM that they each are pointing their bandwidth-hungry Big Blue shops exclusively to-ward ATM backbones. But other vendors see the need for more options.

"Since the Ethernet community has frame and ATM backbone choices, the question arises whether the token-ring world should have the same options," said Randall Campbell, product manager of the internetworks business unit at Cisco. "ATM is an available solution, but not the only solution."

Tolly agreed. "There might be a need for a frame-based multivendor token-ring solution no matter how good and cheap ATM gets," he said.

Ditto from 3Com. "Customers want options," said Ed Harper, product-line manager at 3Com. "What they would really like is something in between token ring and ATM."

For its part, 3Com will offer virtual LAN trunking products — based on the IEEE 802.1q standard — that enable 100M bit/sec token-ring transfers between its switches, while preserving the token-ring frame. The devices are now in beta and will ship later this year.

Not to be outdone, Cisco will enhance its Fast Ethernet InterSwitch Link (ISL) trunking protocol, making it possible to attach ISL tags to token-ring frames and route the frames across 100M bit/sec Fast Ethernet links. ISL is part of the software that controls Cisco routers and Ethernet switches. The ISL-enabled products will ship in the second half of the year.

And Cabletron will offer yet another approach in an upcoming switch. IBM, the company most closely associated with token-ring, is mum on a high-speed token ring strategy for now.

The fact that many of the heavyweights are backing frame-based high-speed token ring may even force ATM purists such as Bay and Madge to embrace the approach in the future. "If 3Com, Cabletron, Cisco and Olicom stand up and do a frame solution, then we'd be fools not to," Bay's Jacobs said.

So far, all of the approaches are proprietary, and none will be interoperable in multivendor networks. Customers that choose one of these options will likely be locked into working with one vendor.

That's why the group accepted a proposal made by Jacobs to begin talks on a standards-based version of high-speed token ring. The group plans to reconvene later this summer and likely will bring in big customers to help set some directions.

While this plan at least raises the hope that the vendors could agree on a common specification, it will take time, particularly if they strive to develop the spec in a real standards forum. That's a luxury the market may not afford them. ■

Glitch slows UUNET to crawl

By Denise Pappalardo
Fairfax, Va.

If the Internet felt slower than usual last Monday, you were probably a victim of the brownout on UUNET Technologies' network that slowed services in the Northeast.

No one is disputing that there was a brownout. But UUNET and Cisco Systems, Inc. — which sold the Internet service provider its routers — are at odds over how it happened.

The problem, both sides agree, was a router memory failure. After that, the stories diverge. According to UUNET, the ISP's hubs in Washington, D.C., and Newark, N.J., dropped packets because of a software glitch on its Cisco routers. The hubs are like points-of-presence where UUNET users' traffic is routed to and from the Internet.

The routers suffered what the ISP is calling a "memory leakage." Typically, after a router uses a block of memory, it puts the block back into a pool of usable memory. But that is not what happened on UUNET's routers last week. Instead of the memory being usable, it was fragmented, said Alan Taffel, vice president of marketing at UUNET.

Large clusters of data that came through the routers could not be handled by the fragmented memory blocks. Once the routers ran out of memory, they automatically reset.

UUNET notified Cisco, which sent over a software patch. The software Band-Aid freed up more memory in the routers' cache so it would not overload, said Bob Michelet, director of corporate relations at Cisco. The patch is a temporary measure meant to be used until UUNET ups the memory on its routers, he said.

UUNET started upgrading the memory on the routers, which Cisco contends was the real culprit. Cisco recommends that its ISP customers use 128M bytes of total memory on their route switch processor boards, Michelet said. UUNET uses 64M-byte memory boards on most, if not all, of its 7,500 routers.

UUNET said it never received a recommendation from Cisco concerning memory for its 7,500 routers. "But clearly, once this event occurred, we discussed the memory issue with Cisco, and we agreed the right course of action would be to upgrade the routing memory to 128[M bytes]," said Jim McManus, vice president of systems engineering at UUNET.

Almost every large to midsize ISP uses some Cisco equipment, so should users be concerned? That depends on who answers the question. Cisco claimed UUNET was the only ISP using 64M-byte route switch processor boards.

One ISP agrees. Genuity, Inc., Bechtel Enterprises' ISP subsidiary, said it would not run a router with less than 128M bytes of memory. Genuity uses Cisco 7513 routers with fully loaded memory because the routers have to store the routing table for the entire Internet, said Rodney Joffe, chief technology officer at Genuity. ■

ANALYSIS

Kevin Tolly speaks his mind on the Token Ring Futures Summit. Page 24.

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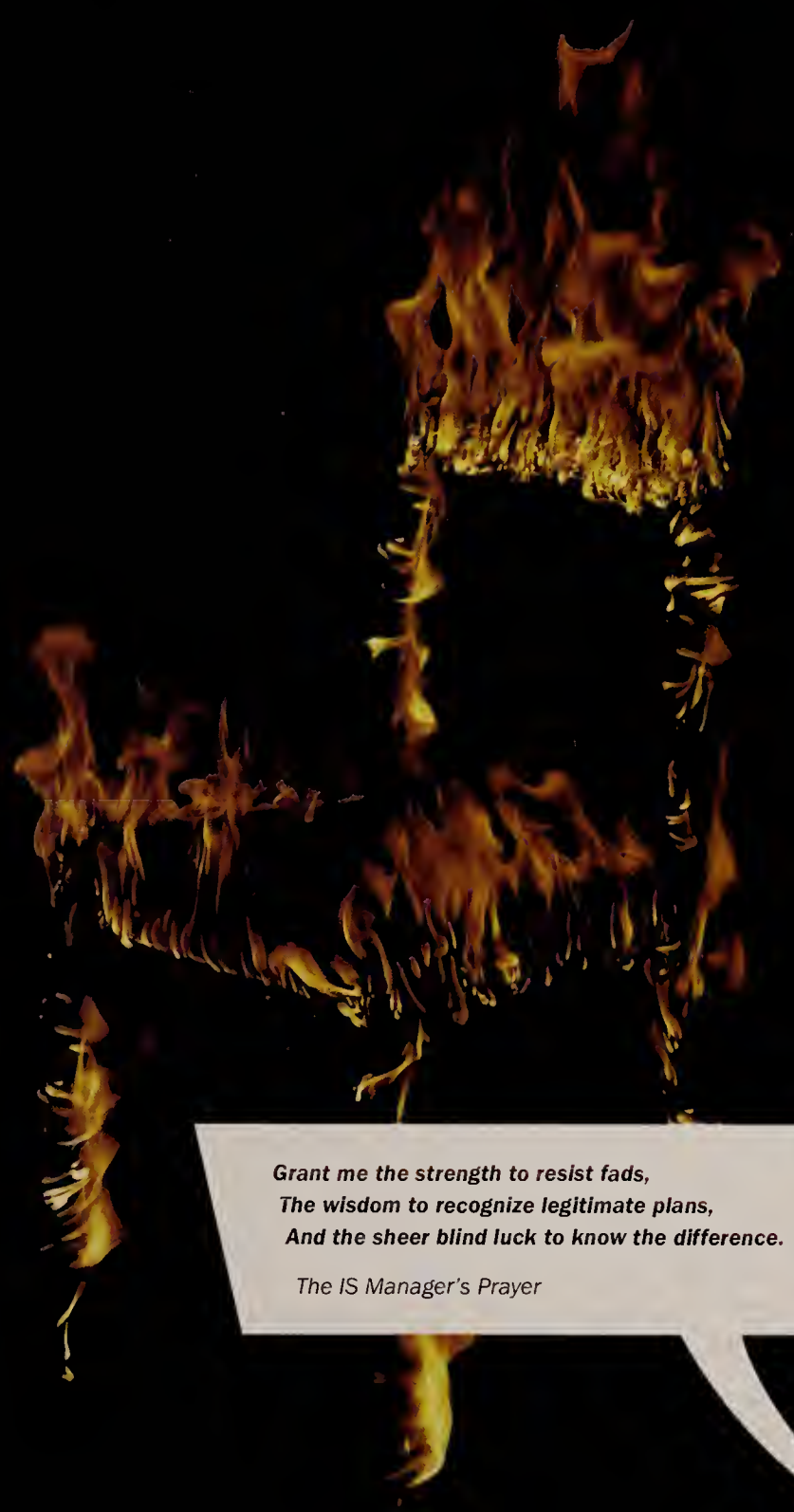

Grant me the strength to resist fads,
The wisdom to recognize legitimate plans,
And the sheer blind luck to know the difference.

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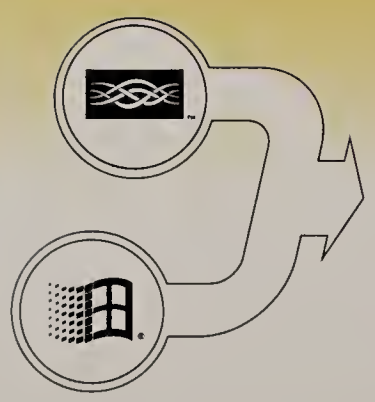
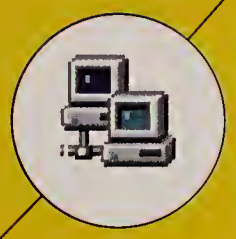


BackOffice works *on Windows NT® Server and Windows NT Server works on pretty much any system you might have in place. You can add a single Windows NT Server into your NetWare or UNIX environment and start running a BackOffice-based solution tomorrow. And Windows NT Server is tremendously scalable. So you can actually move the technology forward in well-planned steps, instead of the white knuckle, all-or-nothing leaps IS people are frequently forced to make.*



BackOffice is not a noun. BackOffice is an adjective. For example, if you did your job well, collaborated effectively with your coworkers and were basically enjoyable to work with, you'd be a BackOffice kind of person.

What about the Internet?

For quite some time now people have been promising you that the Internet/intranet would change the way you do business. But they never explained how that was supposed to happen. Microsoft BackOffice provides a range of software solutions that embraces Internet standards and provides all kinds of Internet and intranet functionality. Giving people access is easier. Creating killer Web sites is easier. Creating an extranet for your outside vendors and partners is easier. Doing business on the Web is easier. And that makes it easier to decide on a smart Internet/intranet strategy for your company.

Integration: *You should be able to add new server capabilities into your existing system without starting from scratch. Moreover, you should expect cooperation between server products.*

Comprehensiveness: *Every BackOffice server will do its appointed task entirely and efficiently. Furthermore, the family of BackOffice products, taken together, covers a comprehensive range of business needs. And as businesses demand more from technology, BackOffice will continue to anticipate these demands.*

Microsoft BackOffice is a family of server software applications built around three core philosophies.

Simplicity: *A solution should not be any more difficult than it has to be. Thanks to their integration with Windows NT Server, thanks to their familiar interface, thanks to a bunch of basic design decisions, you will find BackOffice server applications to be easier to install, deploy and administer than any other system. It's that simple.*

As goes BackOffice, so goes Windows NT Server. *These three philosophies also apply to the relationship between BackOffice server products and Windows NT Server. Not only is Windows NT Server famously easy to administer, but its integration with the BackOffice family of products means that most administration tasks need only be performed once—for example, you just create one account per user, no matter how many applications they use. And Windows NT Server is inherently scalable—you can run a single Windows NT Server in a mixed environment or you can build a global network that runs entirely on Windows NT.*

Well, what about it? *Microsoft Windows NT Server has an Internet strategy built in. It's called Internet Information Server. IIS lets you create, deploy and administer a simple Web site or a full-blown corporate intranet. IIS lets people in your organization view information stored in BackOffice or existing systems using a standard browser. IIS includes: Active Server Pages so programmers and designers can create dynamic content; FrontPage™ server extensions for one-button publishing to the Web; NetShow™ conferencing software for multimedia on the Web; and more.*

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There is a BackOffice product for every business problem we can name. When you come up with more problems, we'll come up with more BackOffice solutions.

Windows NT Server	*This is a multipurpose operating system capable of handling applications, file-and-print, communications and the Web. It includes Internet Information Server, a powerful transaction server and DNS server. And, by the way, it's the operating system that makes BackOffice work. We believe it is the future of network computing.*
Exchange Server	*This is an Internet standards-based server that delivers powerful messaging and collaboration capabilities. More than e-mail, Microsoft Exchange Server gives you business solutions like scheduling, group contact lists and task management.*
SQL Server	*This tremendously scalable, high-performance RDBMS features Internet integration, integration with desktop tools and applications, and an open-system architecture, making it a superior platform for delivering line-of-business and data warehousing solutions.*
Systems Management Server	*This allows you to centrally manage and troubleshoot your entire PC network—desktop and server computers. You can inventory hardware and software, deliver new software and perform diagnostic services—all from a single location.*
SNA Server	*SNA Server gives PC network users reliable access to host systems—from AS/400 machines to large mainframe systems. SNA Server can be used to support line-of-business applications like decision support, Internet/intranet access and online transaction processing.*
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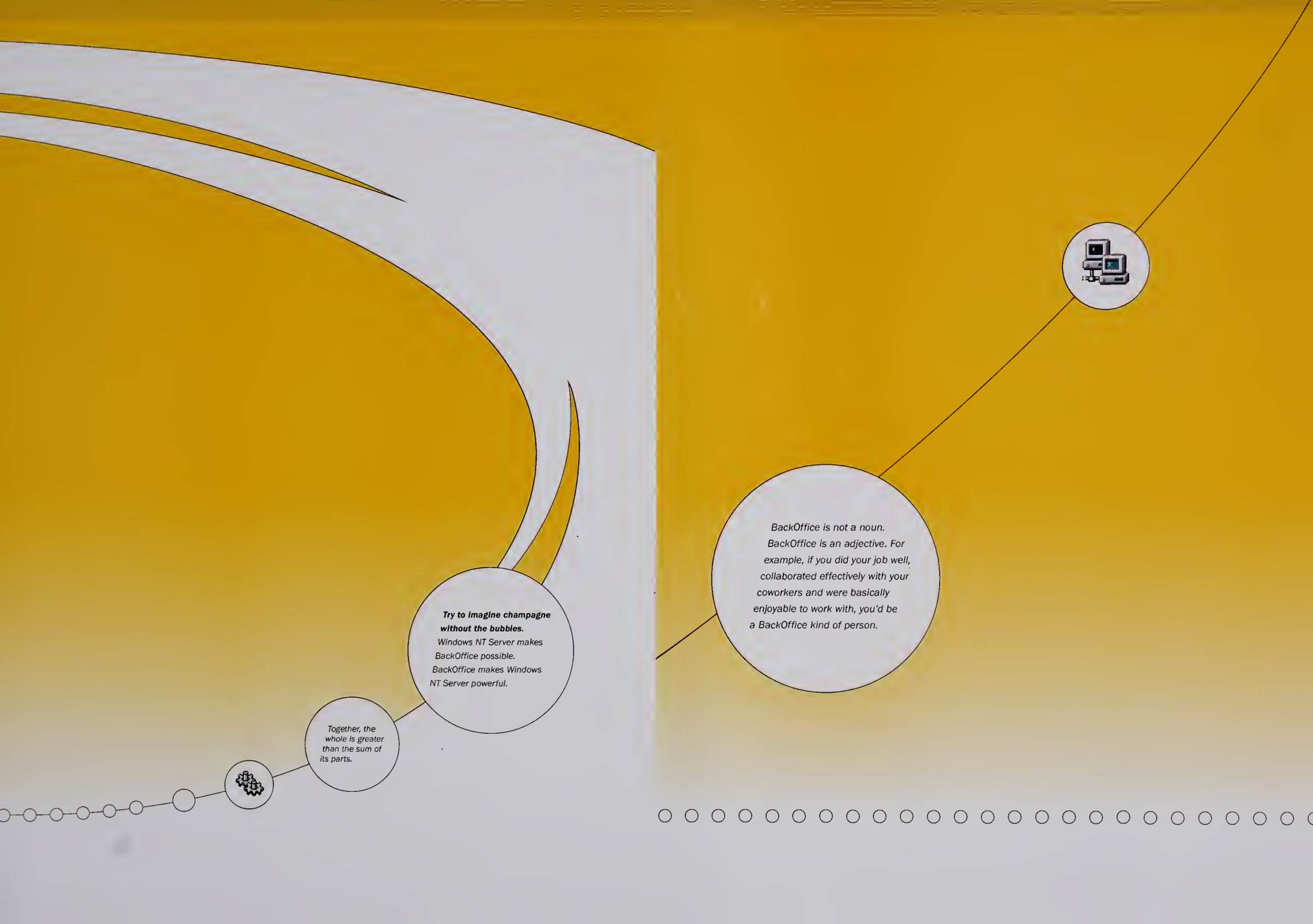
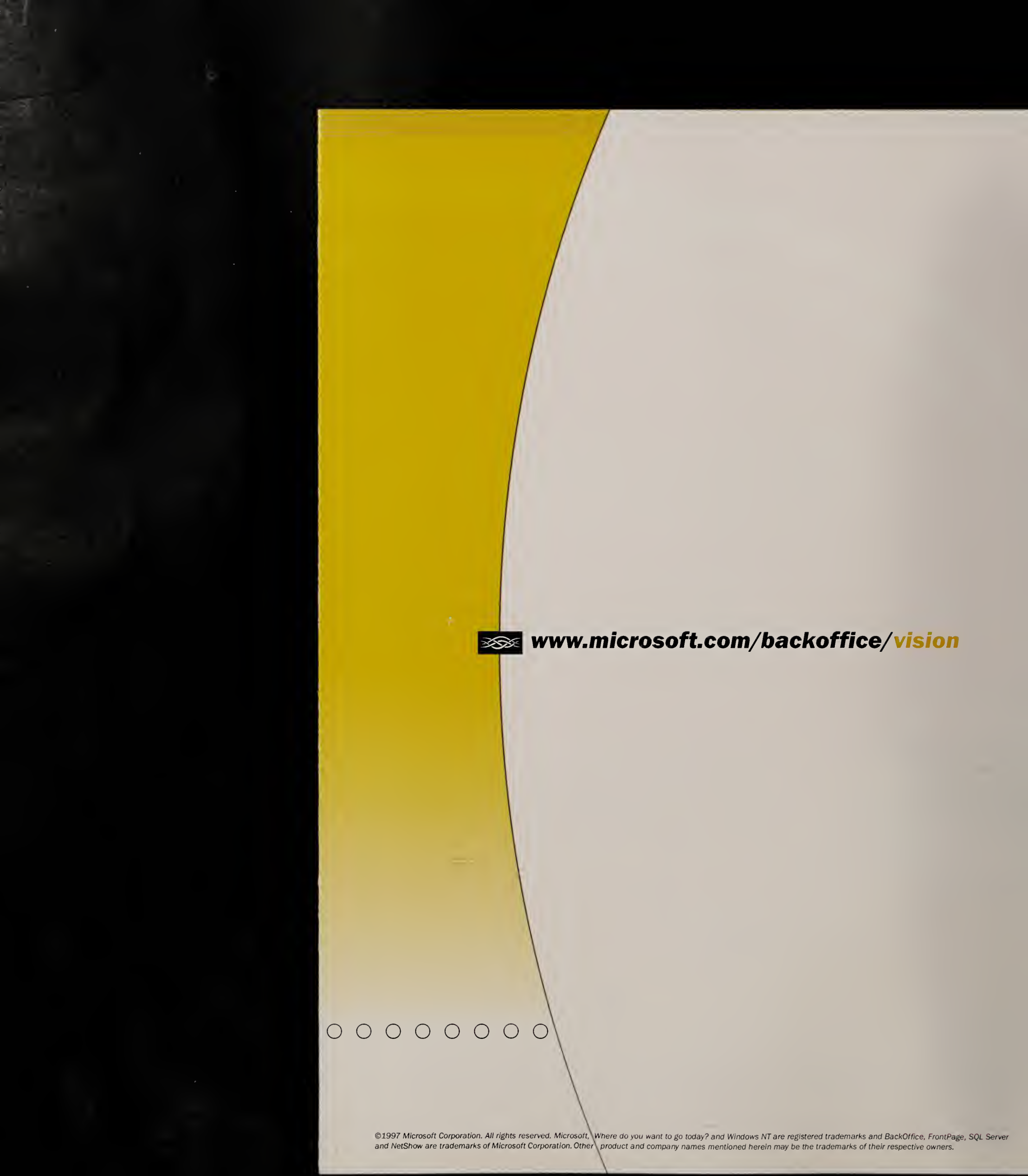

BackOffice is not a noun. BackOffice is an adjective. For example, if you did your job well, collaborated effectively with your coworkers and were basically enjoyable to work with, you'd be a BackOffice kind of person.
Try to imagine champagne without the bubbles. Windows NT Server makes BackOffice possible. BackOffice makes Windows NT Server powerful.
Together, the whole is greater than the sum of its parts.



www.microsoft.com/backoffice/vision

Briefs

■ **Cabletron Systems, Inc.** *last week unveiled an* **ATM switch module** *for the company's wiring closet chassis. The new SmartCell 6A000 ATM switch module, used with the SmartSwitch 6000, provides 16 switched ATM ports at 155M bit/sec for less than $1,000 per port. As many as three SmartCell 6A000 modules may be combined in a single* **Smart-Switch 6000** *chassis to provide up to 48 switched ATM ports. WAN access capabilities include OC-3 and OC-12, with T-3 and E-3 links available soon.*

The module allows customers to implement high-speed links to an ATM corporate backbone as well as aggregate ATM, Ethernet and Fast Ethernet workgroup switches. The module will ship in 90 days.

✆ Cabletron: (603) 332-9400

■ **Newbridge Networks, Inc.** *last week announced a management application that can be used to control Newbridge's VIVID switches as well as network gear from recently acquired* **UB Networks, Inc.**

The **VIVID NetDirector** *application, which features a Web interface, allows customers to manage the physical network, network services and applications. Pricing starts at $2,995, and the software is available now.*

✆ Newbridge: (408) 496-0111

■ **Banyan Systems, Inc.** *this week will roll out software that gives end users access to all Banyan VINES and StreetTalk for Windows NT network files, printers and e-mail via a Web browser.* **Intranet Connect** *— formerly code-named Yoda — sits on a Windows NT 4.0 server running Microsoft Corp.'s Internet Information Server. Banyan's offering will be available this week and costs $4,995 for 25 concurrent users.*

✆ Banyan: (508) 898-1000

The FORE forecast: It'll take more than ATM

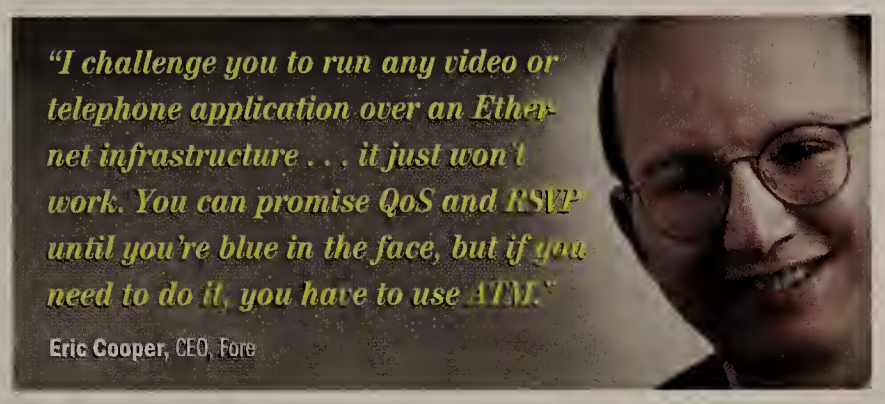
ATM leader may need to test Gigabit Ethernet waters and put more emphasis on WAN products, observers say.

By Jodi Cohen
Pittsburgh

Despite the fact that ATM has taken its knocks in recent years, FORE Systems, Inc. has been able to string together solid financial numbers.

The ATM pioneer has maintained a year-over-year revenue growth rate of about 70% and has been the ATM LAN market share leader for the past three years. Not too shabby.

But can the $400 million company keep it up, even as it faces new competition from internetwork powerhouses such as 3Com Corp. and Cisco Systems, Inc.?



Wall Street does not seem to think so. The company's stock, which once traded as high as $40 a share, hit its low of $12 a share in March and has been hovering in the mid-to-upper teens for the past couple of months.

"[Gigabit Ethernet] may be contrary to FORE's motto: All roads lead to ATM," says investment associate Tom Bain.

While customers spent twice as much on ATM gear in 1996 as they did in 1995, frame-based switches last year outsold ATM switches $3.9 billion to $398 million, according to International Data Corp.

Add new Gigabit Ethernet gear and Layer 3 switches to the frame-based mix this year and that revenue gap promises to widen.

In light of these factors, analysts said FORE must take several steps to ensure it remains successful. These include pushing into new product areas, such as Gigabit Ethernet, as well as expanding its WAN ATM efforts.

"I'm banging my head against the wall wondering why FORE is not embracing Gigabit Ethernet along with ATM," said John Armstrong, principal network analyst at Dataquest, Inc. in San Jose, Calif.

"If you take the religious approach like FORE does and try to proselytize technology to customers, they just don't want to hear it anymore. Customers want to make their own decisions, so why not be able to buy both technologies from FORE?"

FORE is not ruling out its eventual involvement in the Gigabit Ethernet market. In fact, the company spent $35 million in December to buy start-up Scalable Networks, Inc., which has developed Gigabit Ethernet technology. Company officials had little to say about that purchase but emphasized that ATM and technologies that feed into ATM backbones will continue to be FORE's focus for the foreseeable future.

"We are not making [Gigabit Ethernet] a first priority," said FORE CEO Eric Cooper. "There are a lot of vendors that are trying to be a supermarket of networking, but that doesn't describe FORE. We believe ATM is the best match for solving the needs of the extended enterprise from the desktop all the way to the central office."

The Pittsburgh-based company derives the bulk of its revenue from ATM products. The remaining 35% of its revenue comes from Ethernet switches, and 90% of those feed into ATM backbones.

"Our Ethernet products are not used instead of ATM; they are used alongside ATM," Cooper said. The company gained its presence in the Ethernet switch market by snapping up Alantec Corp. and Applied Network Technologies, Inc. in 1995.

But Gigabit Ethernet may be another story.

"[Gigabit Ethernet] may be contrary to FORE's motto: All roads lead to ATM," said Tom Bain, an associate at Alex. Brown & Sons, Inc., an investment firm in Baltimore.

Rather than leading to ATM, Gigabit Ethernet may replace it as a backbone technology, Bain said.

Gigabit Ethernet also would allow customers to install all-

See FORE, *page 18*

Citrix upgrade makes multiuser NT system faster, more scalable

By Christine Burns
New York

Citrix Systems, Inc. last week announced a free upgrade to its Windows NT-based Windows application server that is more scalable, easier to manage and faster than its predecessors.


Citrix's Weiss *says that they will deliver WinFrame 1.7 next quarter.*

WinFrame 1.7 will use NT 3.5 as its base operating system and feature Citrix's multiuser extensions, which let multiple users simultaneously tap into server-based Windows applications.

Citrix will deliver Version 1.7 next quarter and follow up with WinFrame 2.0 — which runs on NT 4.0 — around year-end, said David Weiss, the company's director of marketing.

WinFrame 1.7, introduced at PC Expo here, will give customers a glimpse of what they can expect in Version 2.0 and beyond.

For instance, Citrix has added load-balancing software to WinFrame 1.7 that allows end users to access Windows applications running on any of several clustered WinFrame servers.

The software is designed to channel end-user requests to the server that is least busy at the time.

It also includes tools that allow administrators to manage these clustered servers as a single machine.

And Citrix added more tools for application management and security administration.

The Application Manager program lets administrators manage applications using logical names instead of physical addresses.

For increased security, WinFrame 1.7 enables administrators to compose an access list of users for all applications.

Also, WinFrame 1.7 will include persistent object caching, which allows Windows images or bit maps to be stored on WinFrame clients, making access to the information faster.

The software upgrade is free to existing customers and will be available next quarter.

✆ Citrix: (954) 267-3000

WIRED WINDOWS

You call this independent?

When is an independent study not so independent? When a software vendor hires a firm to research a subject, then follows up by flooding the market with copies of the study and accompanying press releases.

Dave Kearns

That's what Microsoft recently did on the subject of electronic messaging. Microsoft commissioned Shilo Associates to conduct research that was packaged into a study Microsoft is promoting under the heading "Exchange Server 5.0 Wins Head-to-Head Match with Lotus Domino 4.5."

What we once called e-mail and later called groupware now goes under the name "collaborative computing." The major applications, such as Microsoft Exchange, Novell GroupWise and Lotus Notes/Domino, are rich environments for sharing documents, schedules, notes and messages.

You might expect, then, that the Shilo report compared major facets of the Exchange and Domino servers or perhaps highlighted the currently hot total cost of ownership issue. Sorry, both are wrong answers.

Instead, the report goes into excruciating detail about tests run on the Post Office Protocol 3 (POP3) mail server implementation of the two products. POP3 is a protocol some e-mail end users employ to send and retrieve mail with Simple Mail Transfer Protocol-based Internet mail servers. For example, Eudora is a POP3 mail client.

Most Exchange server sites, though, wouldn't bother using Eudora when they can choose from Microsoft's own rich selection of clients, including Microsoft Mail, Exchange Client and Outlook. And none of the Microsoft clients use POP3 when communicating with Exchange server; they almost invariably choose Microsoft's own Messaging API.

In other words, the study reports on something in which few network administrators would be interested. But it does allow Microsoft to say it beat Lotus at something having to do with electronic messaging. Take a look at the report (www.microsoft.com/exchange/compete/lotus/dominoperf.htm) and decide if this is what you should base a purchase decision on for a groupware/collaborative computing product.

A better report, though flawed in that it amounts to no more than an opinion survey, is one Novell commissioned.

Novell's press release headline was "Creative Networks' ROI Study confirms GroupWise is the most cost-effective groupware solution." Creative Networks gathered opinions about messaging and groupware from sites running GroupWise, Exchange or Notes (www.novell.com/groupwise/cni/html/overview_and_background.html).

Tip of the week

For a truly independent study on one aspect of the competition between Exchange and Notes, take a look at Creative Networks' report, "Lotus Notes Release 4, Microsoft Exchange and SMTP/MIME." The report (www.creative.com/impact/specials/cds/) was funded by and created for Control Data Systems, a messaging system integrator.

At least it attempts to cover most major aspects of the applications.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

FORE

Continued from page 17

Ethernet LANs and push ATM technology out into the WAN, analysts said. That is one reason observers say FORE needs to pursue the WAN market aggressively.

FORE has been increasingly busy in the WAN market, growing revenue from zero to 20% of its total over the past two years.

"The big surprise is that FORE's gotten into carrier networks with wins like MCI's Internet backbone," Bain said. "It will be interesting to see if FORE's focus changes from local to wide-area, since there is a lot more money being spent on the WAN side for ATM." ■

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- After a study conducted by the Harvard Network Device Test Lab, Scott Bradner remarked that the Fast Ethernet SmartSwitch was "...the fastest internetworking device I have yet seen."

- And in another test of leading Ethernet and Fast Ethernet solutions, the Tolly Group found the SmartSwitch offers outstanding VLAN and RMON support.

- Cabletron scored highest in VLAN management in McConnell Consulting's "VLANs: Head-to-Head," a comprehensive evaluation of 12 leading vendors' solutions.

- During the Switching Showdown at Comnet '97, Cabletron garnered over 50% of the vote in a *Network World* audience poll.

- For the second year in a row, *Network Magazine* (formerly *LAN Magazine*) awarded Cabletron's SPECTRUM enterprise management solution its 1997 Product of the Year in the category of Management Platform.

- In WAN switching, Cabletron's FRX4000 frame relay solution from CSI Netlink won the annual "Tester's Choice" award handed out by *Data Communications*.

THIS JUST IN ...

- Cabletron's SmartSwitch wins Network World's 1997 Intranet Excellence Award in the Infrastructure category.

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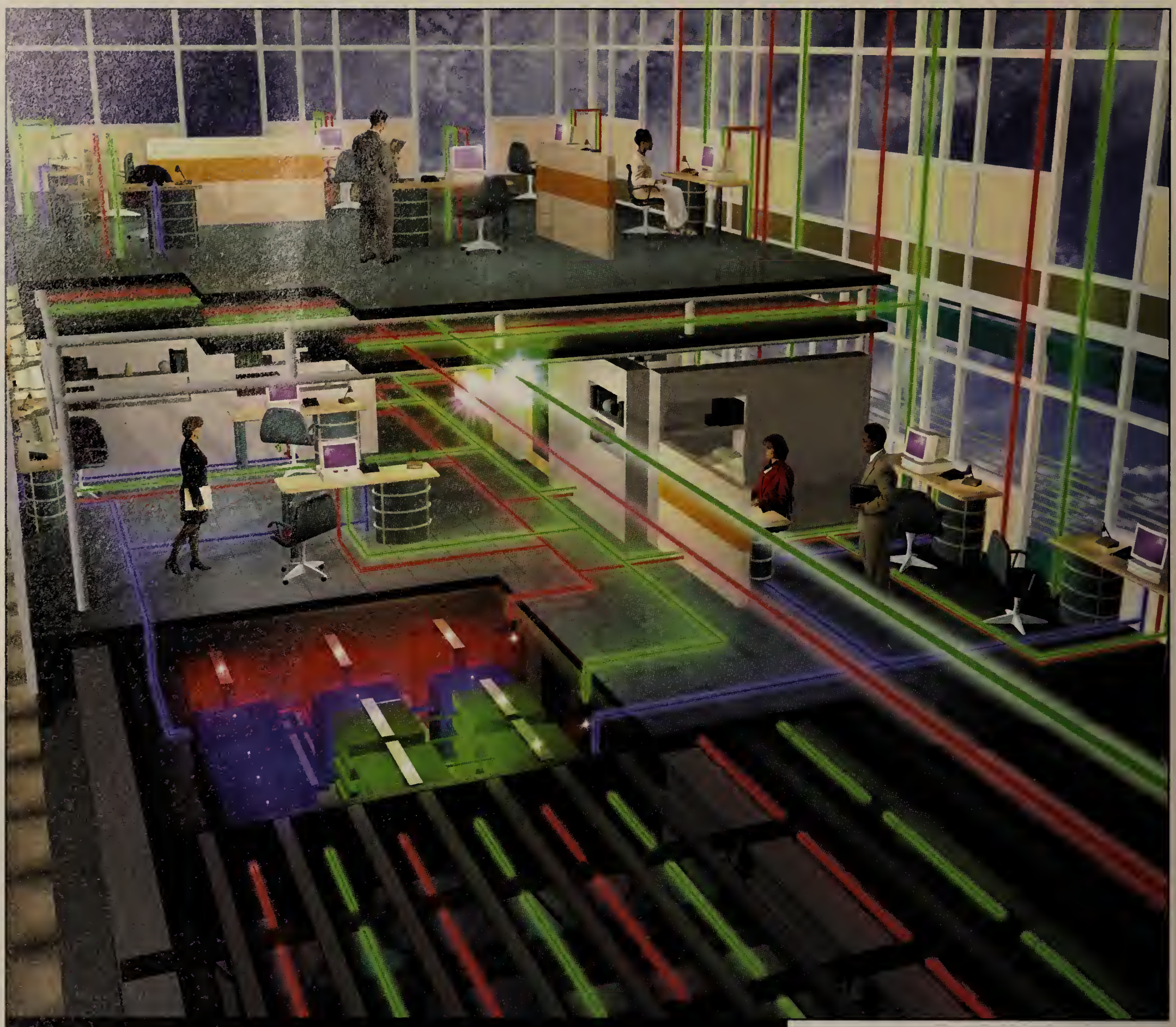

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Briefs

■ **Shiva Corp.** *last week announced the* **LanRover Power-Up Series** *— a modular packaging of its LanRover remote access gear designed to let users buy only the features they want. The modules, called Power Kits, consist of software that provides remote access capabilities.*

For example, the Connectivity Kit provides dial-in, dial-out and LAN-to-LAN access. The Security Kit provides third-party security support and Web-based monitoring. The Performance Kit provides PowerBurst remote node acceleration technology, which uses caching to reduce connect time. Power Suite is a bundle of all three Power Kits and LanRover Access Manager management software.

© Shiva: (617) 270-8810

■ **IBM** *last week announced a* **wireless PC adapter** *that lets SNA 5250 users access the mid-range host using TCP/IP. The new TN5250 Emulation feature lets IBM's handheld Portable Transaction Computers access AS/400s on Ethernet or token-ring LANs running TCP/IP. The TN5250 Emulator in the PC provides full 5250 emulation for telnet sessions with host computer (TN server) applications. The adapters will be available this month. Pricing was not available.*

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■ **Multi-Tech Systems, Inc.** *last week introduced* **Multi-Mobile PC Card** *with an Ethernet LAN and 56K bit/sec modem interface. The card lets users call in from remote locations and plug in directly to the corporate LAN. Both ports can be used simultaneously.*

Multi-Tech also introduced an ISDN terminal adapter card for laptops that has an analog and a digital port. The ports let users connect to an analog device, such as a fax, or a digital device, such as a remote PC, simultaneously over separate ISDN channels.

The 56K bit/sec Ethernet card costs $529; the ISDN card costs $399. They ship next month.

© Multi-Tech: (800) 328-9717

QAD switches to ISDN, NT RAS for remote access

By Tim Greene
Carpenteria, Calif.

QAD, Inc. needed more remote access bandwidth, so it switched from modems to ISDN and adopted Microsoft Corp.'s NT RAS remote access server.

The ISDN move was a pure play for more bandwith, but the NT RAS took more thought. QAD already had Windows NT on part of its corporate network and was leaning toward adopting the operating system's remote access applications, but the company had security concerns.

Specifically, it was worried that the server was susceptible to out-of-band attacks from outsiders. The attacks crash the server when, for example, a hacker sends a TCP/IP command with out-of-band data to an NT server port connected to the Internet (*NW*, May 19, page 1).

Rhys Morgan, QAD's global network operations manager, said that problem seems to have been addressed by a service pack from Microsoft. He is confident now of NT's security working in conjuction with his existing corporate firewalls.

The ISDN project

QAD started the whole project because its sales force needed more remote access bandwidth to demonstrate QAD software, which resides on the the company's corporate network. The 28.8K bit/sec modem pool it had was just too slow.

ISDN seemed to be the best answer, offering dial-up bandwidth of 128K bit/sec.

In addition, it would be a start toward moving half of QAD's 200 telecommuters to the higher bandwidth, which would speed up the large file transfers its sofware engineers routinely make.

In fact, the engineers are authorized to meld two 64K bit/sec ISDN B channels when they need it, while others who do not need that much bandwidth are restricted to one, Morgan said.

When he went looking for hardware, he considered 3Com Corp., RAScom, Inc. and U.S. Robotics.

"RAScom won because it was easy to administer [and] it could be managed by a Windows NT domain. The other systems were all [managed by proprietary systems]," Morgan said.

In addition, NT supports a variety of billing software applications that track remote access use, he said.

The RAServer 2500 is a rack-mountable Intel-based server running Windows NT that supports up to four Primary Rate Interface ISDN lines and 96 analog modems. QAD is feeding the server with two PRIs.

In addition to giving remote ISDN users more bandwidth, the PRI lines also establish connections faster for those remote users who still use analog modems.

Morgan attributed that to the higher transmission quality of the digital PRI link vs. the individual analog lines connected to the modem pool. He said the average time to establish a 28.8K bit/sec analog connection is 45 to 50 seconds faster than it was before.

Making the switch

Since the initial installation of the RAServer, about 10% to 20% of his telecommuters have switched to Basic Rate Interface ISDN from 28.8K bit/sec analog modems, and he has plans for that to grow to 50% over the next year and a half. The slow migration in part is because of delays in scheduling phone companies to install BRI ISDN lines.

With the success of NT RAS in the network so far, QAD has plans to expand NT use. "I operate a rather complex trusted NT domain that is running [a high] level of security. I have Internet firewalls, my telecom shop is moving toward NT as an operating system for the majority of its telecom applications," Morgan said.

He said he hoped to use NT with Steelhead, the new IP routing software Microsoft is developing (*NW*, June 2, page 1).

QAD also plans to install RAScom servers and PRI lines at its offices in New Jersey and Amsterdam, the Netherlands. ■

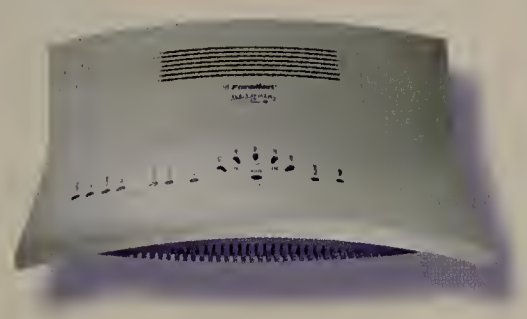
Farallon makes branch office routers field-upgradable

By Tim Greene
Alameda, Calif.

Farallon Communications, Inc. last week introduced branch office routers that let remote users more easily add bandwidth to overburdened devices.

The new Netopia 460 and 660 routers let users swap out WAN adapters by replacing a daughter board in the unit. For example, customers who decide that using dial-up ISDN costs too much can upgrade a Netopia router to a dedicated 56K bit/sec digital data service (DDS) line. If they need more bandwidth later, they can pop in a T-1 daughter board.

WAN interfaces are available for ISDN, synchronous/asynchronous traffic, 56K bit/sec DDS or T-1.



Netopia 460 and 660 routers have one Ethernet and one WAN port. The 660 routers support IP and IPX routing, and the 460s include support for AppleTalk.

Brian Dierdorff, senior systems and network engineer for TIA Co. in Bedford, Mass., said the one-port, T-I model gives him a less-expensive alternative to a two-port, Cisco Systems, Inc. 2501 router.

TIA, an Internet service provider that supplies its customers with routers for Internet access, said its customers require more bandwidth to support 'Net access or access to their own Web pages. The ability to swap out WAN cards on the Netopias allows TIA to upgrade existing boxes without requiring all new hardware, he said.

David Strom, a consultant in Port Washington, N.Y., said Netopia includes Scheduled Connection, a feature that acts as a way to save money and enhance security. Scheduled Connection presets the router to make 'Net connections at specified times — for example, to download e-mail.

The routers with synchronous/ asynchronous ports cost $895 for IP and IPX support and $1,095 for Model 460 with AppleTalk support. They are available now. The 660 routers with T-1 ports cost $1,395 for IP and IPX and $1,595 for the 460 with AppleTalk. They will be available next month.

The routers with 56K bit/sec DDS ports, also with integrated DSU/CSU, are scheduled to ship in August. Pricing has not been set.

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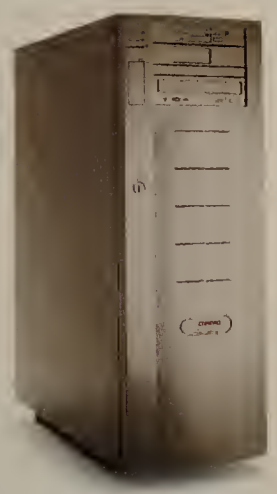

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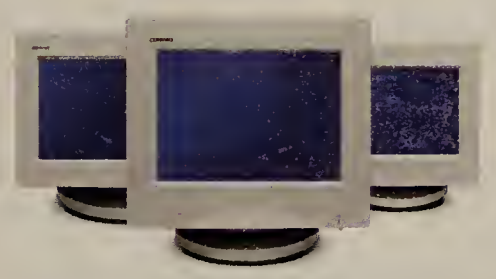

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INTERNETWORKING MONITOR

Token ring futures fire up roundtable

In late April, I chided token-ring vendors for failing to give clear direction to their customers (*NW*, April 28, page 20). With Ethernet and its Fast and Gigabit brethren clearly emerging as the dominant LAN topologies, what were the implications for the millions of token-ring users?

At my invitation, last Wednesday high-level representatives from all the major providers of token-ring technology met to discuss the future of token-ring networking. Present were one or more participants from 3Com, Bay, Cabletron, Cisco, IBM, Madge Networks, Olicom and Texas Instruments.

Here are some highlights of the day-long meeting:

- Contrary to what some might have thought, these vendors are well aware of the changes in the landscape in the past year. Every vendor recognizes the undeniable allure of "free" Ethernet networking and realizes that fully functional, heterogeneous internetworks are required. Token-ring and Ethernet stations must be able to access the same resources — or each other — without difficulty.
- All participants noted there is a huge installed base of token-ring stations. From a desktop perspective, these environments are performing quite well — even when 100 or even 200 users are sharing the same token-ring segment.
- Most vendors expect existing token-ring installations to continue for years to come, even though new departments, branches or floors of buildings may go in as Ethernet. Out of the group, only Cabletron and 3Com saw customers looking for an "exit strategy" from token ring. Cabletron estimates 35% to 60% of the customers it has polled want to pull out token ring.

Kevin Tolly

- Several participants noted that sales of token-ring adapters continue to increase. Vendors expect to sell four million of them in 1997. Vendors are already shipping second-generation PCI network interface cards (NIC). Performance is high, and prices continue to decrease. It should be noted that no one implied that, NIC for NIC, token-ring prices would ever get as low as Ethernet.
- All agreed that, while relatively flat, the market for token-ring switch ports is huge. Because earlier products cost too much or delivered too little function, few organizations chose to embark on large-scale migration to switching.

Although high-speed token ring was voted down unanimously by these same vendors little more than a year ago, they have good reason to reconsider the decision. The rapid acceptance of Fast Ethernet and the glowing projections for Gigabit Ethernet's acceptance support the notion that, in addition to ATM's cell-based backbone approach, some customers prefer to build frame-based networks.

3Com, Cisco, Cabletron and Olicom are certain that a frame-based alternative is required. The others are not certain but accepted a proposal made by Bay that, while their evaluations continue, talks begin in earnest on multivendor, high-speed token ring.

The group agreed to reconvene before the summer is out, and we'll keep you posted on what happens.

Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, N.J. He can be reached at (908) 528-3300 or via the Internet at ktolly@tolly.com.

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SPECIAL FOCUS

Internet Protocols

IPv6 will change apps, servers

By Jim Duffy

Users should start planning their migration to IP Version 6 (IPv6) before the current IP Version 4-based (IPv4) technology runs out of gas.

Despite its reliability, IPv4 has address limitations, performance problems, security holes and a raft of other deficiencies. All need to be addressed for the Internet and related IP technologies to move forward — especially in light of the Internet's exploding popularity and growing use as a multimedia delivery system.

IPv6, the next iteration of the Internet Protocol, is the answer. In addition to providing extended addressing, IPv6 is designed to overcome other limitations of the current version, such as quality of service and configuring hosts and routers.

But adoption of IPv6 requires change — changes to applications, routing protocols and addressing servers, such as Dynamic Host Configuration Protocol, BOOTP and Domain Name System — say developers and vendors currently involved with the 6bone IPv6 test network. Some observers even question whether IPv6 is necessary if IPv4 can be enhanced to overcome its limitations.

"If you want to talk about a 'gotcha' or something that will make the transition slower, it's going to be applications," says Helen Sylvester, director of engineering for FTP Software, Inc. in Andover, Mass. "They have to be IPv6-enabled."

Despite all of the bells and whistles that come with the new protocol, addressing comes up as the No. 1 reason there needs to be an IPv6. IPv4's 32-bit address field will not accommodate the growth in Internet usage, expanding bandwidth requirements and steady increases in processing power, developers say.

IPv6 features a 128-bit address field that exponentially increases the number of devices the protocol can support compared to IPv4.

Some industry pundits even predict that IPv4 addresses will be exhausted within the next five to eight years. That is one of the reasons why the Internet Engineering Task Force (IETF) has issued a request for comment document, RFC 1933, on suggested methods for IPv4-to-IPv6 migration (*NW*, Jan. 20, page 37).

The migration methods the IETF recommends are dual stacks and tunneling. The dual stacks method refers to IP nodes that support IPv4 and IPv6 protocols. The tunneling approach advocates running IPv6 packets over existing IPv4 infrastructures. Vendors say dual stacks and tunneling should minimize any migration snags for users.

"They're the tools that essentially allow you to build a phased migration," says Mike Paratore, router marketing manager for Bay Networks, Inc. "You don't have to migrate all of your routers to IPv6 immediately. You can have islands of IPv6 connectivity which you connect via either of these tunneling mechanisms."

Bay will ship IPv6 on its routers in the second half of this year. Users are less than comforted by Paratore's assurances, however.

"I wonder what's going to break?" says James Wiedel, director of networking in the computer services department at the University of Southern California at Los Angeles. "I'm sure it's going to break things left and right, undoubtedly."

Other users are just beginning to dip their toes into the IPv6 waters.

"We've just started a project to try and determine which one of the IPv6 stacks is the most stable for the PC and workstation environments," says Brian Power, network administrator at Memorial University in Newfoundland, Canada. "At the moment, I don't have any results, so I don't know what my direction is going to be."

Despite the built-in migration tools, the transition to IPv6 will present users with some pitfalls along the way, vendors say. Most will crop up when users retool applications to run in the new network environment, according to FTP's Sylvester.

For example, the user interface field in an application written for IPv4 needs to be expanded to handle the larger IPv6 addresses, Sylvester says. Also, users or developers will have to change how applications pass addresses down to the WinSock interface at the network layer, she says.

WinSock is an application program interface in Windows 95 and NT operating systems that binds applications to the TCP/IP protocol stack. FTP is currently shipping IPv6 software for Windows clients.

Avoiding hiccups

Digital Equipment Corp. recommends that users take inventory of their networked applications before IPv6 deployment to minimize hiccups.

"You have to make a list of what applications you have that put packets on the wire," says Jim Bound, IPv6 architect at Digital. "That is critical. That will be the biggest 'gotcha.' Users should be worrying about that right now, not tomorrow."

Users who want to save themselves from worry should stick with IPv4 and use Network Address Translation (NAT) for expanding addressing, according to Toby Jessup, principal engineer for US WEST, Inc.'s !nterprise Networking Services arm (*NW*, Jan. 20, page 34). NAT servers at the boundary between private intranets and the Internet will allow users to expand addressing by keeping private network addresses distinct from Internet addresses, Jessup claims.

NATs save Internet addresses by allocating them to active Internet users only. When they disconnect from the Internet, the address goes back into a shared pool, reducing the number of Internet addresses organizations require, Jessup says.

"The incremental improvement that IPv6 [services] would represent over IPv4 may not be worth the leap," Jessup says.

Jessup's position might be a stretch, according to Sun Microsystems, Inc. Although NATs could provide some incremental improvement to IPv4 addressing, they may also give users the impression that they will not need IPv6.

"[NATs are] not a very scalable solution once the network starts to get very large, once it gets hierarchical," said Praveen Bhatia, product line manager for Sun's Solaris operating system. "If you have a translator at every gateway [between domains] it starts to break down pretty quickly.

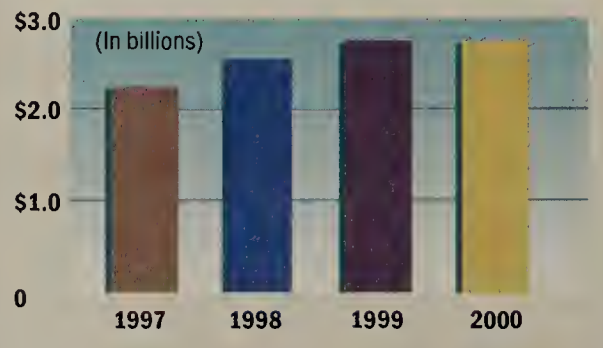
But consultants say users will not migrate en masse to IPv6 for years.

"I'm not sure there are a lot of users that have gotten beyond the testing stage," says Mark Miller, president of DigiNet Corp., a Denver-based data communication engineering firm. ■

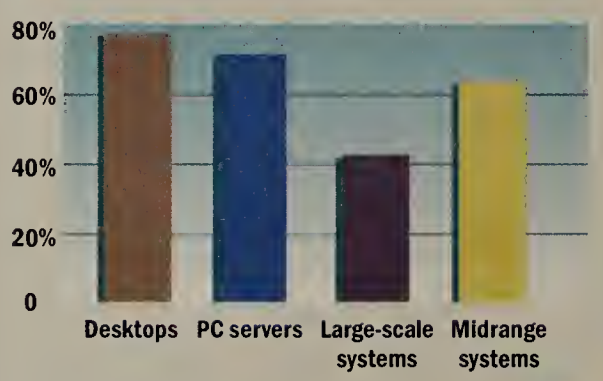
IPV6: IS IT WORTH THE WAIT?

TCP/IP's overall growth is driving the need for IPv6

Worldwide TCP/IP revenue



Worldwide installed base with TCP/IP by the year 2000



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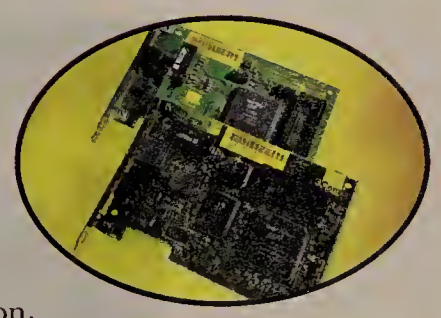

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—Bruce Bond, President and CEO, ANS Communications

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Carriers & ISPs

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Briefs

■ *At the recent Asia Telecom '97 conference in Singapore,* **Federal Communications Commission** *member Susan Ness cautioned countries that have recently decided to break up* **telecom monopolies** *that "the road to competition is not always smooth."*

But Ness, a candidate to succeed departing FCC Chairman Reed Hundt, said that less-developed countries actually may do better than the U.S. in implementing telecom reform. That is because they do not have as much outdated regulation to rewrite or existing infrastructure investment for incumbent carriers to protect, Ness said.

■ **Exodus Communications, Inc.** *and* **Computer Associates International, Inc.** *announced a deal in which Exodus will offer CA's* **TNG Unicenter management system** *to its Web hosting customers. Exodus has standardized on CA TNG equipment and is now passing the various management and monitoring features along to customers. The features include event management, systems administration and paper notification as well as application, Web server, network, operating system and database management options. Service pricing ranges from $50 to $1,500 per server depending on the number of management features a customer wants.*

© Exodus: (408) 486-5000

■ **ANS Communications, Inc.** *is adding a European flair to its* **Internet business.**

Earlier this month, the Elmsford, N.Y.-based Internet service provider announced the formation of its sister company, ANS Communications Europe, Ltd., which is based in London. ANS, a subsidiary of America Online, Inc., offers Internet services to the business market, whereas its parent is fixed in the consumer market.

The European company is expected to focus on supporting ANS' global intranet and Internet service offerings.

Siemens' new ISDN-friendly PBX is introduced to U.S. market

Hicom 300 E eliminates need for line card upgrades, supports multirate service.

By David Rohde
Santa Clara, Calif.

The nation's No. 3 PBX vendor is bringing a new voice network switch to the U.S. market, and it has ISDN written all over it.

Siemens Business Communication Systems, Inc. earlier this month introduced the Hicom 300 E PBX, labeling it a "wideband-ready" switch.

The Hicom 300 E automatically supports ISDN end points with the addition of a snap-in adapter to the telephone or other desktop device, without requiring the expensive change-out of line cards within the PBX.

The Hicom 300 E also supports multirate ISDN, which uses inverse-multiplexed 64K bit/sec ISDN channels for applications that require higher bandwidth, such as videoconferencing or medical imaging.

Users can save money by eliminating the need for switching out PBX line cards to support ISDN BRI, Siemens officials say.

The Hicom box that Siemens is introducing is actually a version of a popular PBX sold in Europe and Asia by the vendor's German-based parent company, Siemens AG.

Saving time and money

Prior to the PBX's official U.S. introduction, software company PeopleSoft, Inc. standardized on the Hicom 300 E in its North American, European and Pacific Rim offices.

The decision to do so "saves time because voice mail and telephone procedures are uniform everywhere," said Steve Zarate, PeopleSoft's vice president of human resources and network services.

Siemens officials said users can save money by eliminating the need for switching out PBX line cards to support ISDN Basic Rate Interface. Trading up 100 users from analog to ISDN lines should cost about $20,000, provided the user first installs the Hicom 300 E.

A similar upgrade using PBXs from competitors Lucent Technologies, Inc. and Northern Telecom, Inc. could result in a six-figure expense, Siemens officials claimed.

Lucent's general manager for its flagship Definity PBX business line, Tim Wilson, confirmed that a Definity ISDN upgrade requires line card and telephone set change-outs.

But he said Lucent's actual cost is about 40% lower than what Siemens claims.

The ISDN adapter is one of nine snap-in modules for the accompanying new line of phone sets, known as the Optiset E.

Other Optiset snap-in modules enable users to save on PBX ports by daisy-chaining analog devices or attaching two telephones to one line (see graphic).

✆ Siemens: (408) 492-2000

Snap and play

The snap-in modules for Siemens' new Optiset E phones include:

Name of adapter	What it does
ISDN Adapter	Provides ISDN Basic Rate Interface S/T interface for two devices
Analog Adapter	Connects additional analog devices without another phone line
Phone Adapter	Lets one phone line support twophone sets
Headset Adapter	Connects to headsets for call center agents

AT&T begins adding inbound connection to Digital Link

By David Rohde
New York

AT&T last week moved to remedy a key limitation in its principal business local exchange service.

The carrier said for the first time, New York City customers of its Digital Link service can start receiving inbound calls on the service.

Digital Link utilizes T-1 dedicated access lines from business sites to AT&T central offices to enable users to place local phone calls, send faxes or obtain Internet access without using the local phone company's network. But until now, Digital Link has not been able to terminate local calls back to the user site.

The outbound Digital Link service is available in 45 states, while the inbound service is available only in New York City. A further rollout schedule for the inbound service was not immediately announced.

A lot of holes to fill

Neither outbound nor inbound Digital Link service replaces ordinary switched local loops of the type typically used in branch offices. And because Digital Link does not support the location signaling required for 911 emergency calls, even large locations utilizing Digital Link must retain at least some lines to the local phone company's switch.

In addition, Digital Link cannot complete calls placed to 800 numbers. AT&T officials said that feature is due by year-end. The carrier first has to alter its billing system to ensure the calling party is not billed for the call, said Bill Evans, AT&T's marketing director for Digital Link.

The key attraction of Digital Link is flat-rate pricing for business local calls, particularly in states such as New York and California, where the regional Bell operating company charges for such calls on a distance-sensitive basis, often making them look like toll calls. RBOC executives have cautioned that Digital Link does not offer nonpeak-hour discounts below RBOC rates during peak hours and is usually more expensive than Bell local service after 5 p.m.

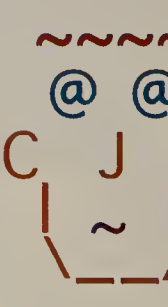
AT&T's Evans noted that Digital Link bills on 6-second increments with an 18-second minimum, as opposed to some local carriers' practice of rounding up to the next minute. ■

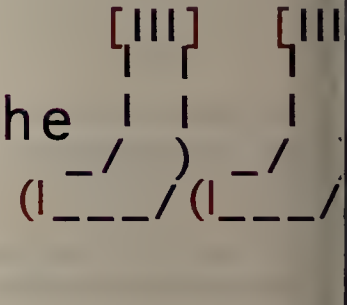
REASONS TO MAKE THE MOVE

According to AT&T, Digital Link users can:

- Have their outbound local calls included on their long-distance bills.
- Have local calling volume contribute to overall volume discounts.
- Have local calls covered by AT&T network reliability guarantees.

Hey, U overworked network manager. :-\ You know tha

astrophe, and cause  , your boss, to hav



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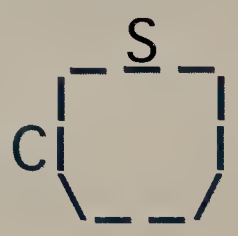
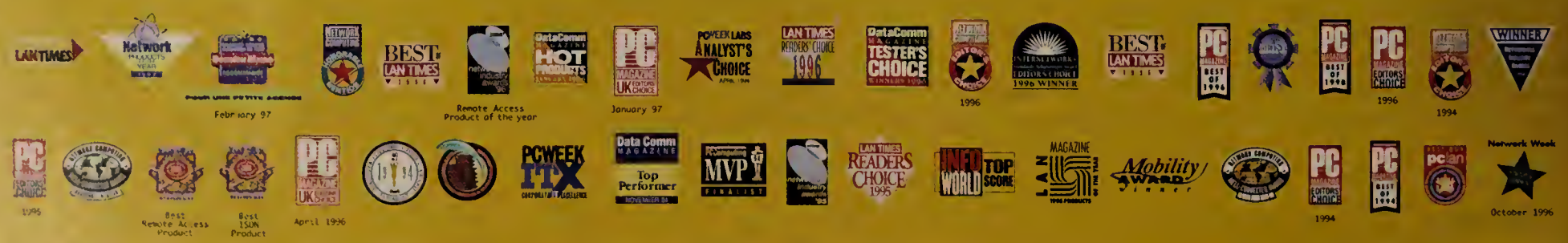
call us, and then take a  break already. Look fo

"This high speed beauty blew the socks off the competition when transferring IP, and it ran IPX to the limit." Network Computing, March 15, 1997.



❑ Yes! Please send me a copy of "How To Evaluate A Remote Access System."

❑ Please send me a copy of the latest Data Communications review of remote access servers.

Complete and mail this card, or fax it to 508-788-1539 or call 1-800-977-4482.

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Title _____

Company _____

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Phone # _____ Fax# _____

How many remote users do you plan to support?
❑ 1-50 ❑ 101-250 ❑ 501-1000
❑ 51-100 ❑ 251-500 ❑ 1001+

When do you plan to implement a remote access solution?
❑ within 30 days ❑ 4-6 months ❑ 1+ year
❑ 1-3 months ❑ 7-12 months

How many locations do you have in the U.S.?
❑ 1-5 ❑ 26-50
❑ 6-25 ❑ 50+

How many employees in your organization?
❑ 1-100 ❑ 251-500 ❑ 1001-5000
❑ 101-250 ❑ 501-1000 ❑ 5000+

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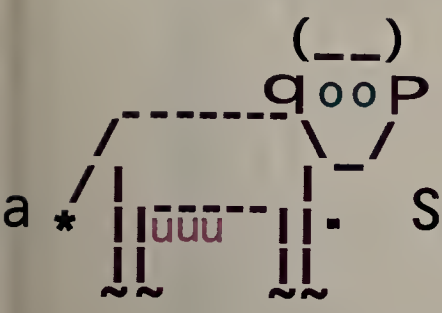
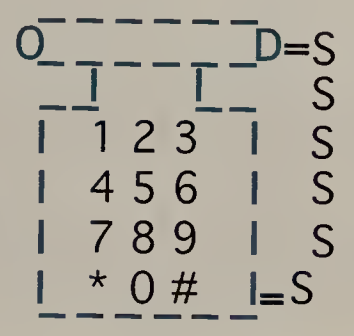


a * . So listen up. Just recently, the performance

off the competition. :-D So get on the 

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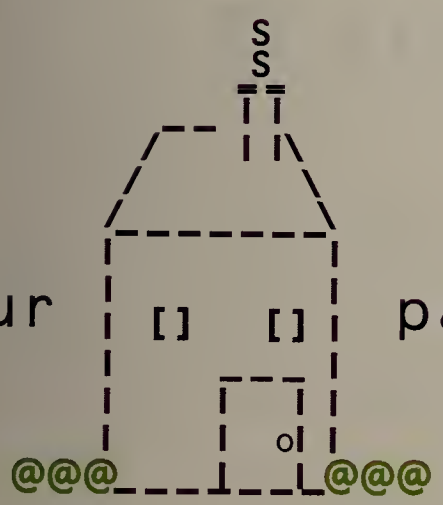
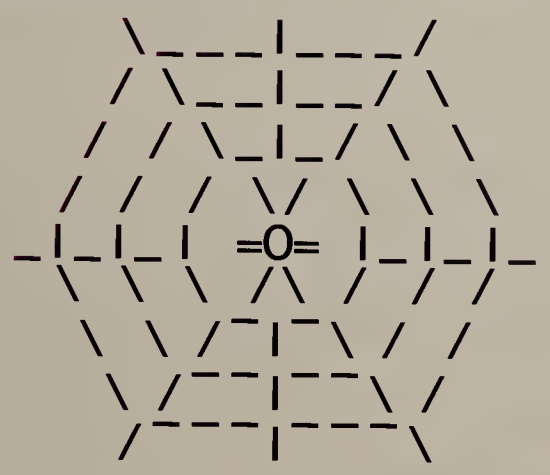


our page on the  at shiva.com.

*SMA as defined by the U.S. Bureau of the Census. All services not currently available in all cities. Fortune 500 is a registered trademark of Time, Inc.

All our agents are busy. We'll be with you shortly.
All our agents are busy. We'll be with you shortly.
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All our agents are busy. We'll be with you shortly.

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The other local phone company.®

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EYE ON THE CARRIERS

Telcos out to freeze market with preemptive strike

The Microsoft-sponsored Webzine *Slate*, edited by former *Crossfire* host Michael Kinsley, has a useful feature known as "Varnish Remover." In it, political consultant Robert Shrum takes a 30-second political or advocacy television ad and reveals its truths, half-truths, omissions and manipulations.

It's in the Varnish Remover spirit that an ad currently running on Washington, D.C., television stations caught my eye. It's sponsored by the United States Telephone Association (USTA), the trade group dedicated to retaining incumbent local exchange carriers' privileges and subsidies. The commercial is not hysterical or accusatory, like some recent policy ads run by MCI. Instead, it depicts a schoolteacher helping students during what appears to be a study hour, with several students tapping away at PCs.

David Rohde

The teacher turns toward us and says she got a call from a long-distance carrier offering to sell her local telephone service. She calmly tells us that she had some questions for this carrier, especially how much it invests in the community. She says the existing local phone companies (how she knows this, I have no idea) invest $20 billion a year in their communities, including $2 billion in schools, and offer service to everyone. "Do AT&T and MCI do that?" she asks.

The fallacies are pretty obvious. Local phone companies offer universal service because the law requires them to do so. And the government pays them to do it with billions of dollars in subsidies. Big companies that they are, the telcos naturally spend (OK, OK, "invest") billions of dollars to bring phone lines to user sites, many of which, naturally, are schools.

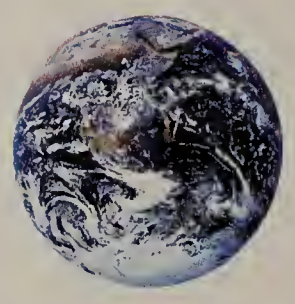
But what's so amazing about the ad is not what it says or omits. What's striking is the fact that it's running at all. Ms. Washington-area Schoolteacher claims to have gotten a call from a long-distance company selling local phone service, to which I respond, "Oh, really?" AT&T does not offer local telephone service in the Washington area. MCI has been making noises but is concentrating on business local service. Sprint sells wireless phones and digital wireless service via a personal communications services license, but not ordinary landline connections to the home.

What USTA is doing is taking a page out of the political consultants' handbook. The ad is a preemptive strike against the day, if it ever comes, when AT&T or MCI does call you at home offering you independence from the regional Bell operating company. That's just like a quasi-independent "committee" supporting a candidate who hasn't announced a bid for office yet, but is running ads to establish his image or tear down a phantom opponent.

Far from making markets more competitive, this kind of move tends to fossilize them. Think of all the times that otherwise vibrant markets — dare I mention PC operating systems? — have become frozen because of preemptive marketing activities. If you're wondering why the local phone market is so tough for competitors to crack, perhaps this is one place to start.

Rohde is Network World *senior editor of Carriers & ISPs. He can be reached at david_rohde@nww.com.*

Your intranet has to run on what you have. Your browser has to make it run better.



Microsoft® Internet Explorer runs on the platforms in your business. The difference is, it also works with them. That's because it's not a one-size-fits-all browser interface. Internet Explorer is designed to take full advantage of the native technology of each platform you use. That's a step-by-step process. Starting with the home team: Windows® 95. Windows 3.1. Windows NT®. Then the Macintosh. And in our next version, UNIX. So whatever the platform, your users get to see more of everything on the Internet and intranet. Browser weirdness goes away. And you've got a browser that makes it simple to see your intranet on whatever you have, put what you want into it, and run it the way you want.

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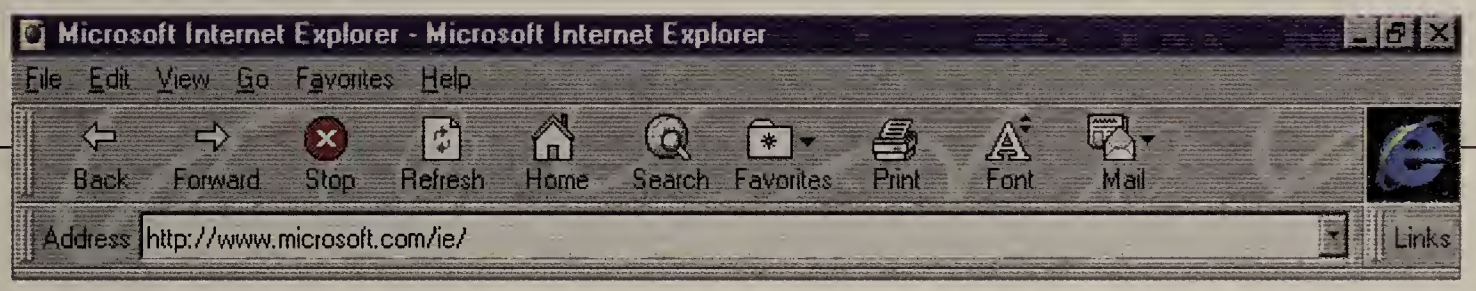

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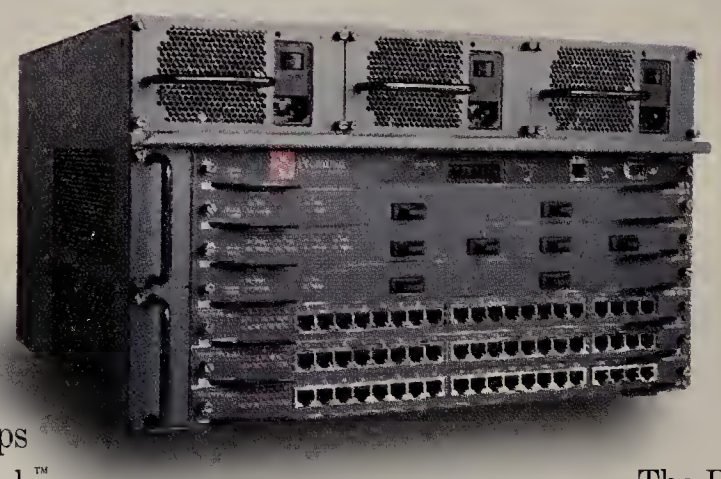
Introducing Prominet's P550 Cajun Switch



The Prominet P550™ Cajun™ Switch is the highest capacity Gigabit Ethernet switch available. Now campus LAN managers can migrate networks and backbones to gigabit speeds without distress.

A Ragin' Recipe. The P550 Switch has a spicy blend of 41.6 Gbps on the backplane, unique OpenTrunk™ VLAN interoperability, extensive fault tolerance and CoS/QoS support, all in a high-density package. This means more bandwidth, no bottlenecks, better manageability and dependable multimedia support.

Chock Full. At two to three times the capacity of any other gigabit switch (41.6 Gbps backplane, 20.8 Gbps throughput), the P550 fits into 10.5" of rack space while switches with less performance require double or triple the space and cost more.

The Big Easy. Integration of 10/100/1000 Mbps speeds with various modules lets users allocate bandwidth where needed. Six payload slots scale from workgroup to multithousand-node, multimedia-rich campus backbone requirements.

Zesty Multilayer Switching. The P550 is designed for multilayer switching that scales to more than 10 million packets per second. A simple module swap will provide Layer 3 switching for IP and IPX routing.

Hot Stuff. To learn more about the first in a family of hot switching products from Prominet, point your Web browser to: **www.prominet.com/info/.**

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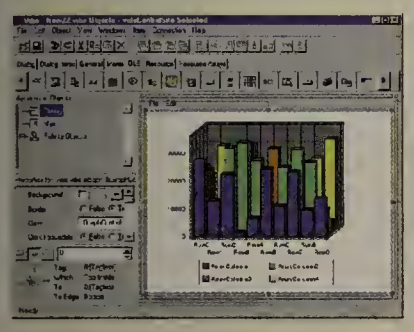
Briefs

■ **Visix Software, Inc.,** *of Reston, Va., has released a new edition of its* **Java development tool kit** *that includes a visual query builder, database connectivity and new visual editors. Vibe Enterprise Edition provides developers with a set of reusable class libraries for*



quickly building complex database applications in Java. Later this year, Visix will add software to support the Internet Inter-ORB Protocol for object-to-object messaging over a network. The Enterprise Edition costs $2,995 per developer and $998 per server.

✆ Visix: (703) 758-8230

■ **Axent Technologies, Inc.,** *of Rockville, Md., this week will introduce a Solaris edition of its OmniGuard/Defender Security Server. The* **token-based security system** *is designed to prevent unauthorized access to network servers. Axent already offers Windows NT and NetWare versions of the product. The software is available now and costs $10,995 for 100 end users.*

Separately, Axent said it has integrated OmniGuard/Defender with CyberGuard Corp.'s CyberGuard Firewall for Unix. This combination is designed to help companies protect enterprise networks from unauthorized access by remote users via the Internet.

✆ Axent: (301) 258-5043

■ *Former Apple Computer, Inc. CEO* **John Sculley** *is stepping aside as president and CEO of* **Live Picture, Inc.** *but will remain chairman of the Scotts Valley, Calif.-based vendor of Internet imaging products. Replacing Sculley is* **Kathleen Mitchell,** *a former IBM and Oracle Corp. executive.*

Sun outlines what's ahead for Java

Company officials promise speed and flexibility improvements to the programming language.

By Carol Sliwa

"Windows is so last year," according to Scott McNealy, CEO at Sun Microsystems, Inc.

But unless Sun delivers on the many promises it has made regarding its Java language, programmers may be tempted to stick with the Microsoft Corp. platform he finds so passé.

Java innovations expected to be rolled out over the next few months promise to make the programming language more flexible and applications based on it faster.

Get more info online:

- **A look at building mission-critical applications in Java**
- **A comparison of the Java Management API with other ways to monitor networks**

One piece of technology, code-named Swing, is designed to make it easy for developers to control the look and feel of the graphical user interface they want Java application users to see.

The current look and feel of these programs tends to be tied to a specific platform. With Swing Sets, developers can dictate the look and feel using blocks of prebuilt code that Sun's JavaSoft division will make available with its Java Foundation Classes (JFC). If developers do not want the interface to look like Windows, they can make the interface look different.

A developer release of the JFCs — which Sun is working on with Netscape Communications Corp., IBM and Apple Computer, Inc. — is due out at the end of the month. The JFCs will be part of the Java Development Kit (JDK) 1.2 that is due in late summer or early fall, according to JavaSoft Product Marketing Director David Spenhoff.

The new JDK also will feature security enhancements, including authentication, digital certification and object signing technology that lets an applet go outside the Java sandbox in a controlled fashion to perform a specific function. The sandbox is what keeps an applet that is running in a browser from accessing other system resources.

"An applet can be certified to do certain things like open files named such and such," said James Gosling, Java's creator and a Sun vice president. "You can specify in fairly fine grain what this [applet] is allowed to do; that way, you can grant it more capabilities and limit the damages it could do."

To address concerns that Java is too slow, Sun will incorporate HotSpot technology it acquired earlier this year from LongView Technologies LLC, which is conducting business in California as Animorphic Systems. The HotSpot virtual machine, expected by year-end, will find parts of an application that can be sped up and make them run faster.

"We're starting to get some really nice benchmarks," Gosling said. "It's kind of hard to know where the numbers are going to be, but they're pretty exciting."

Calling Java's slow performance a myth, McNealy said the company also will continue "going after the silicon" to improve Java's speed.

"We're actually talking to the silicon manufacturers about putting Java acceleration right on the silicon that goes on smart cards," McNealy said. "So we're starting right at the hardware, [then going] all the way through the JDK and the just-in-time compilers."

Sun plans to spend more than $1 billion on research and development during the next 12 months, with 100% of it focused on the Java-based network computing model, according to McNealy.

Also upcoming from Sun are:

- An updated Bean Development Kit (BDK), code-named Glasgow, that Gosling described as a "bunch of extra goodies for people who are developing [JavaBeans]." JavaBeans are components developers can use to build Java applets. With BDK, developers can keep better track of their JavaBeans and make them interact more easily with each other. A BDK 1.0 June release, which is currently available, includes a beta version of an ActiveX bridge that will let Microsoft's ActiveX components interoperate with JavaBeans. The final BDK is due by year-end.
- A new technology it is working on with Netscape called BeanConnect. This will let developers connect multiple JavaBeans on an HTML page to build Java applications. ■

Atreve relieves taxed Web sites

By John Cox
Cambridge, Mass.

Remember how simple the World Wide Web was . . . about a year ago? Just download a freeware Apache Web server and a beta version of Netscape's Navigator, and you were off and running.

Well, things have changed.

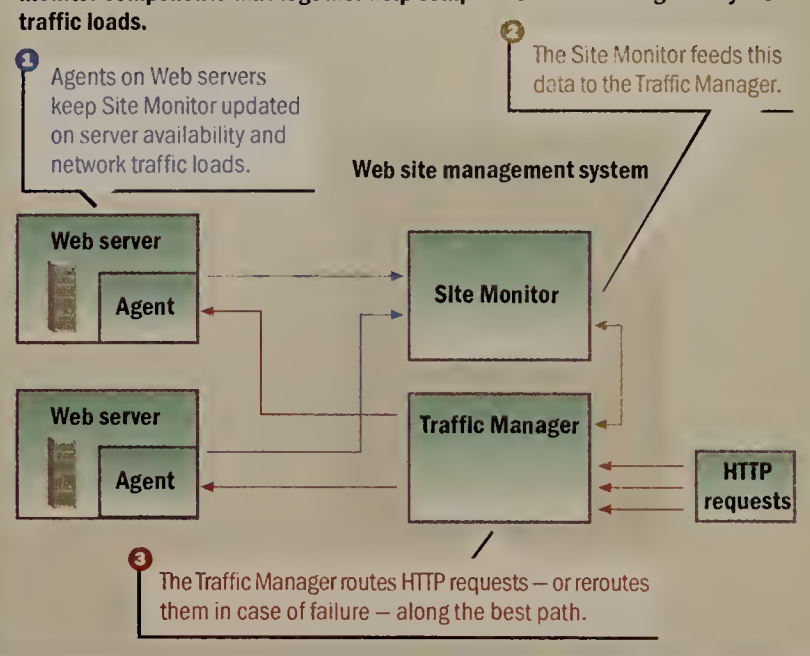
Increasingly, Web sites are being used for critical, mainstream business applications. But only now are tools emerging to help companies manage the multiple servers and high traffic volumes that typify these new Web sites.

One such offering is Webspective from start-up Atreve Software, Inc. Atreve was founded by former executives from middleware vendor Open Horizon, Inc. shortly after the company was acquired by Borland International, Inc. last year.

See **Atreve,** *page 49*

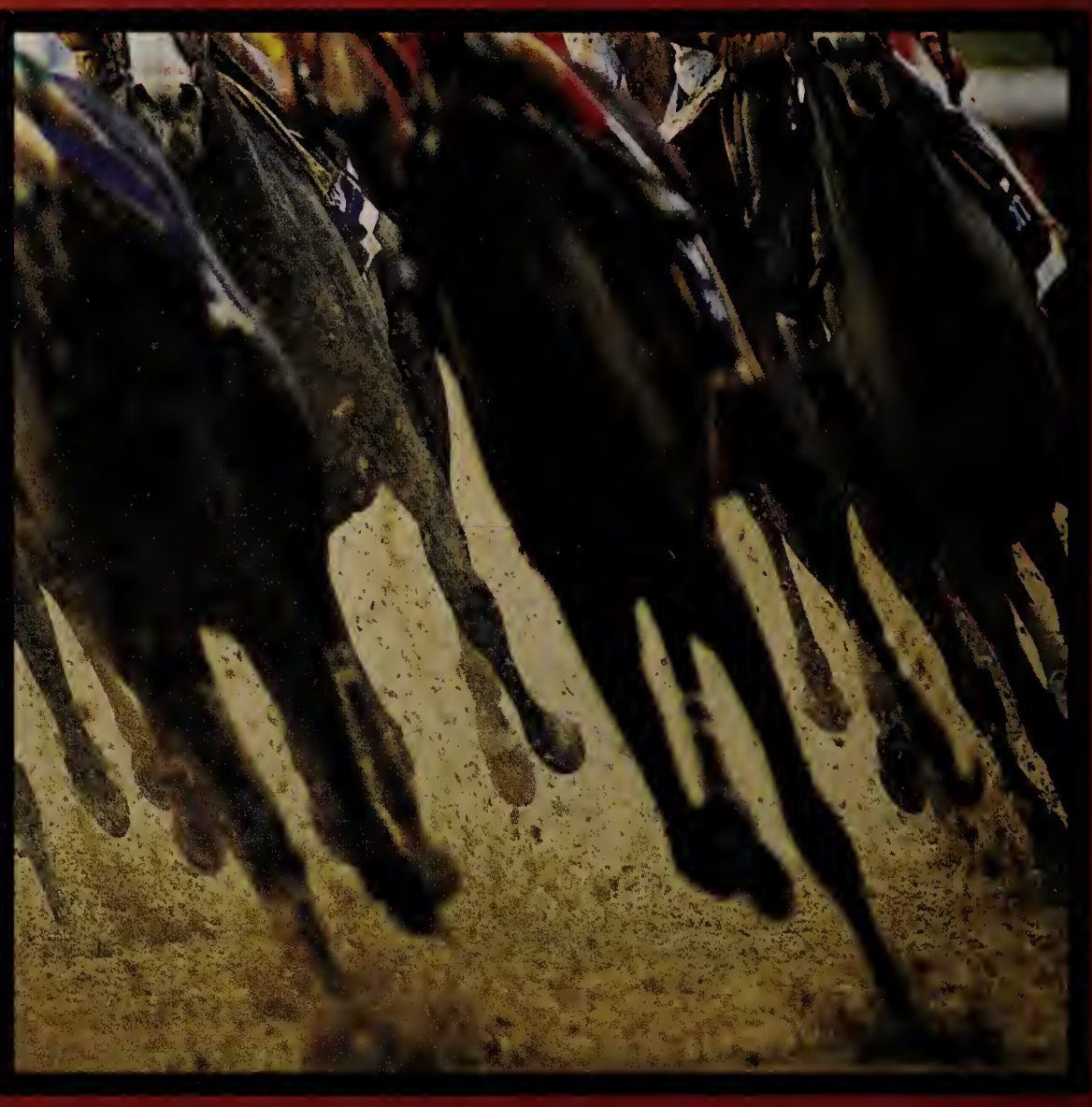
INSPECTING WEBSPECTIVE

Atreve's Webspective software consists of agent, Traffic Manager and Site Monitor components that together help companies better manage heavy Web traffic loads.



THE NETWORK IS CHURCHILL DOWNS.

WE'RE SECRETARIAT. YOU'RE THE JOCKEY. GET ON WITH IT.



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…. Page 22.

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- Newsgroups on the corporate Web
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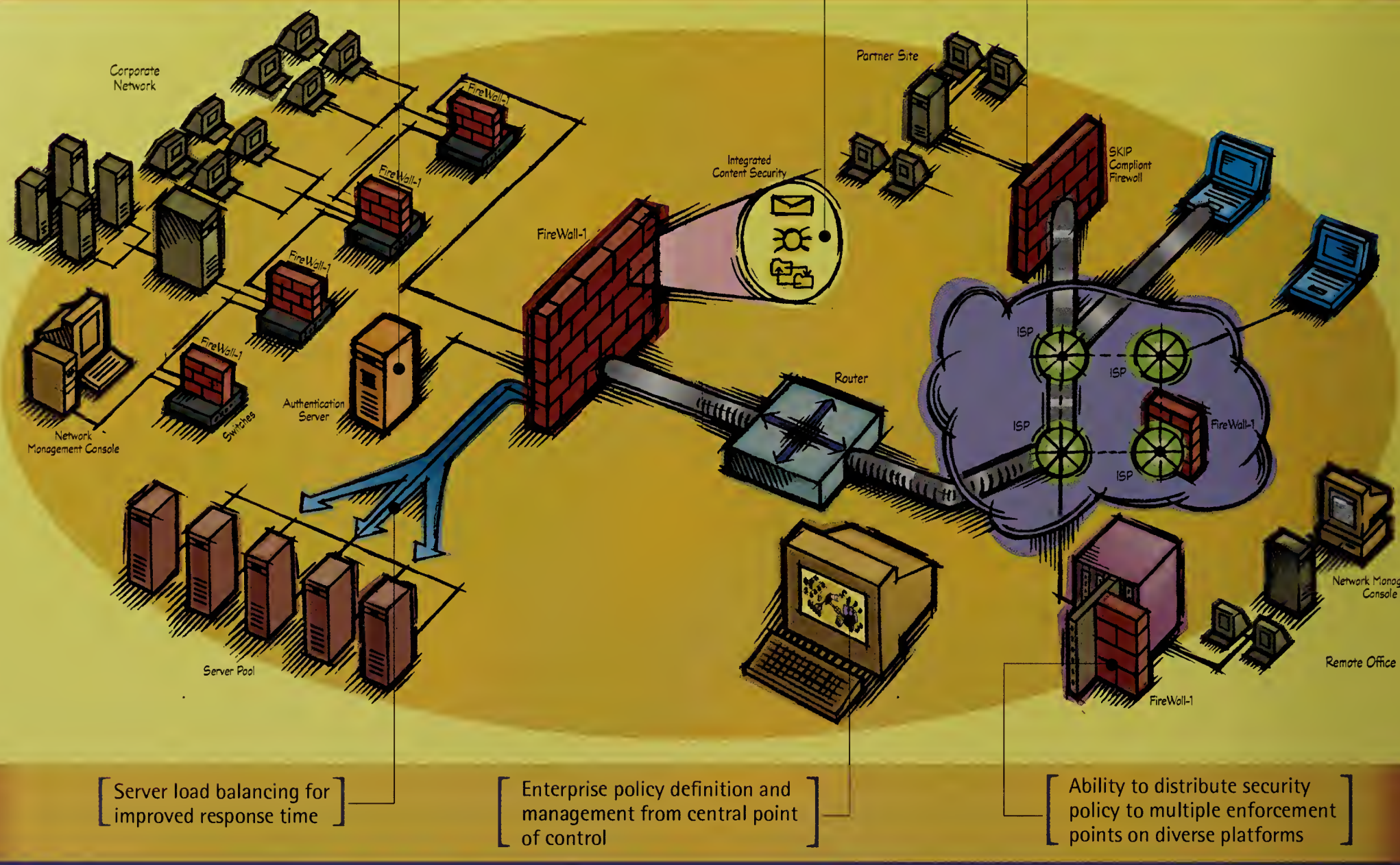
[Support for multiple authentication schemes, including RADIUS]

[Content security against macro viruses, malicious Java/ActiveX applets and undesireable URLs]

[Secure VPNs supporting emerging encryption standards for multi-vendor interoperability]



[Server load balancing for improved response time]

[Enterprise policy definition and management from central point of control]

[Ability to distribute security policy to multiple enforcement points on diverse platforms]

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FireWall-1

INSIDE

IntraNet

June 1997
Volume 2, Number 6

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Your virtual connection to newsbits, opinion, insight, humor and other marginalia from planet intranet.

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From the Editor

"The fish who won't bite at a piece of bait because he's afraid there's a fishhook in it is going to starve to death."

— Economic consultant Peter Bernstein on the dangers of not investing

While those putting off use of Java because of security concerns won't starve to death, the point is the same: Fear-induced inaction can cost you dearly.

In our Q&A this month, we tracked down Gary McGraw, coauthor of the new book *Java Security: Hostile Applets, Holes and Antidotes,* and asked him to put Java security in perspective.

The upshot: The threat is real, if not solely a problem with Java. The real culprit is executable content, be it Java, ActiveX or even Word macros. So, if you want to enhance your intranet by supporting Java applets or ActiveX controls, the trick is going to be trying to stop users from inviting in potentially hostile versions of the same from outside.

Don't count on your firewall. And don't think the latest Java Development Kit solves the problem, either (turn to page 30 for more on why).

But, most importantly, don't freeze up worrying about it. "You have to take some risk in order to get great gains, in order to make a profit," McGraw says.

As with all security, the trick with Java and the like is to weigh the advantages against the risks. The answer may be to wait for more secure versions of Java and ActiveX, both of which are in the works.

John Dix, Editor
(jdix@nww.com)

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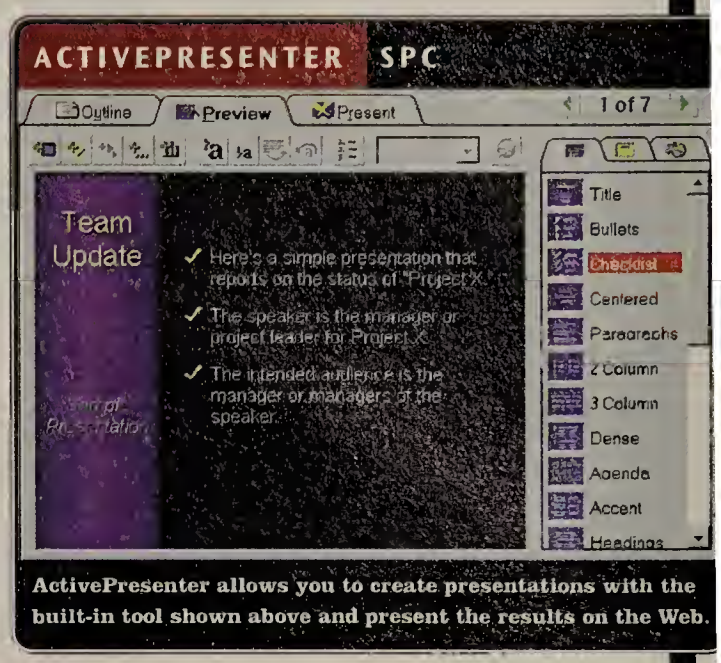
hot links

Web-based presentations

If a picture is worth a thousand words, this new tool should help shorten those dreadfully long conference calls or save you from making a trip.

Software Publishing Corp.'s ActivePresenter lets you conduct PowerPoint-type presentations over the Web. You simply create the presentation using PowerPoint or ActivePresenter's built-in tool, then post it in a presentation center on the Web, complete with information about the date and time of the presentation.



ActivePresenter allows you to create presentations with the built-in tool shown above and present the results on the Web.

Virtual attendees log in at the appropriate time, join a telephone or Internet conference call and sit back to learn. The presenter maintains control of what everyone sees, flipping slides forward and backward at will. The software ranges in price from $50 for up to three participants to $200 for 25. For more information, visit www.spco.com.

JEFF SCHEID

The winners are . . .

Our second annual Intranet Excellence Awards drew entries from more than 300 vendors, evidence that the market is booming. We announced the winners at the recent NetWorld+Interop conference in Las Vegas. They are:

NAME	COMPANY	AWARD CATEGORY	PRODUCT/SERVICE
(Front row, left to right)			
Daniel Klaussen	Netscape	Collaboration tools	Communicator
		Web browsers	Navigator
Jennifer Geisler	U.S. Robotics	Web server hardware	EdgeServer
Jacqueline Ross	Check Point	Security products	FireWall-1
Wade Appleman	Cabletron	Intranet infrastructure	SmartSwitch
(Back row, left to right)			
Guy Hoffman	OpenConnect	Legacy system integration tools	OC://WebConnect
Randy Richardson	Computer Associates	Authoring and development tools	Jasmine
Alan Taffel	UUNET	ISP	Internet Access
Kevin Auger	Novell	Web server software	IntranetWare
Not pictured	Open Market	Electronic commerce tools	OM Transact

The judging panel included: James Breyer, managing partner of Accel Partners; Jeffrey Held, a partner with Ernst & Young's Center for Technology Enablement; J. Neil Weintraut, advisory director of the Internet at Hambrecht & Quist; Richard Villars, director of network software research at International Data Corp.; Edwin Mier, president of Mier Communications; John Dix, editor of *Network World/IntraNet*; and Kevin Tolly, president and CEO of The Tolly Group.

In the works at Big Blue

IBM, like so many of the old guard, has caught the Internet fever. But few are able to devote so many resources to curing it. Stuart Feldman, department group manager of IBM's Networked Computing Software Research Division, says IBM is spending more than $100 million per year on network computing and Internet technology research.

We recently caught up with some of Feldman's team members, and they showed us a few technologies percolating in the labs.

One is called WBI. Pronounced "Webby," it's an intelligent agent for simplifying Web browsing. Research staffer Robert Barrett says WBI essentially acts as an intermediary between your browser and the Web servers you frequent. Among other things, WBI tracks your usage patterns and can suggest shortcuts or automatically check your favorite sites for changes.

With time, the agent begins to venture out on its own, looking for information it thinks will interest you. Findings are presented in what IBM calls Quantum Links. This could be a great tool for a global manufacturing company looking to maximize use of homegrown technology: Engineer's agents could scout the company looking for related projects.

Another interesting development is HotVideo, a way to embed hyperlinks into video presentations. Jeane Chen, an assistant director in IBM's China Research Laboratory, says video hotlinks are a natural extension of the Web medium.

IBM's authoring tool and player make it possible to watch a video through a browser and stop and click on an object — say a car in the background — to get more information about that object. You have a choice of how to show what is linked, including use of a ghosted box around the connected items. A potential application would be in corporate training, where you could give users a way to seek clarification or more information.

Feldman says these and other technologies discussed on IBM's alphaWorks home page (www4.alphaWorks.ibm.com/ Home/) are experimental but someday may turn up in or as product.

THIN IS IN

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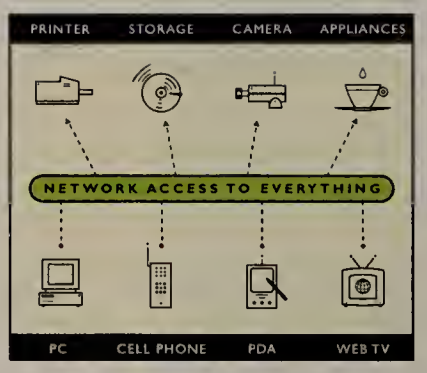

Then you're going to love ThinServer™ Technology from Axis Communications. It's a revolutionary way to network office peripherals like printers, CD-ROM drives, scanners, digital cameras and workgroup storage devices. And that's only the beginning. Imagine using ThinServer Technology for consumer appliances and industrial equipment as well.

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Before you connect anything else to your network, think about the technology that's already helping some of the world's largest companies network smarter. Think ThinServer Technology, only from Axis. Visit us online at www.axis.com or call us at 800-444-AXIS. And see for yourself why thin is in.

AXIS COMMUNICATIONS

NobleNet's NobleNet Web:

Integrating Windows apps with the intranet

BY MARK GIBBS

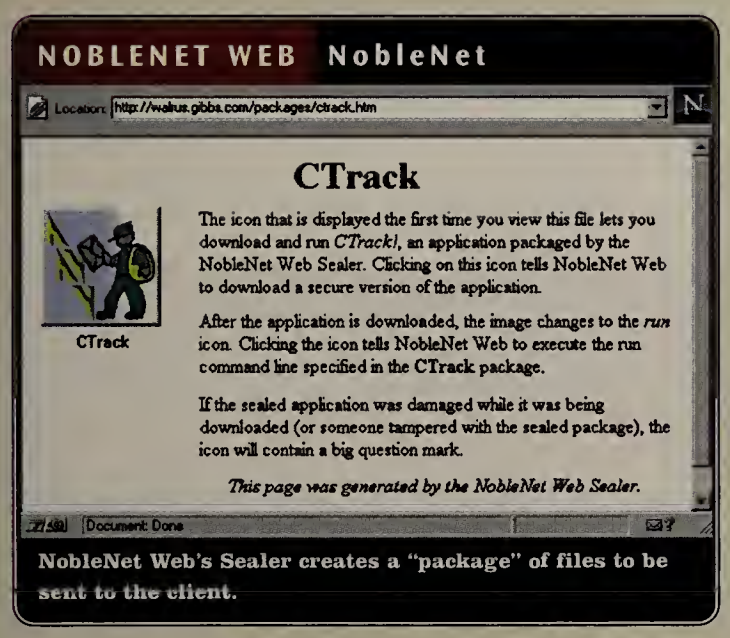
"Fear prophets ... and those prepared to die for the truth, for as a rule they make many others die with them, often before them, at times instead of them."
— From The Name of the Rose
by Umberto Eco

Believe the more radical prophets, and intranets will be taking over the IT universe in next to no time.

But from a pragmatic perspective and for both operational and financial reasons, we need to wring every last drop of value out of the millions of dollars invested in current systems. We need tools that extend the life of applications.

And that's the role of a recently released product from NobleNet, Inc., in Southborough, Mass. The product, called NobleNet Web, lets Windows applications be distributed and executed from a Web server.

In an intranet environment, NobleNet Web has two main uses: distributing a group of files to a specific client subdirectory tree or sending a set of files for installation by a conventional program such as Install Shield.



NobleNet Web's Sealer creates a "package" of files to be sent to the client.

As a file distributor, NobleNet Web copies a set of files to a subdirectory and optionally all subdirectories under it. If the target subdirectory is the root of the client's disk subsystem, then files can be placed wherever required.

However, it's not possible to append or conditionally modify contents of files such as autoexec.bat or to change the registry. This is why NobleNet offers the second option.

Seal and deliver

NobleNet Web comprises the Sealer, Opener and Application Manager utilities.

The Sealer utility takes a set of files, compresses the files individually, creates a package out of the files and builds a simple supporting Web page. The package is a subdirectory containing copies of all the files to be installed and a control file with the extention .nnd. This control file specifies the files in the package, their checksums and other package parameters.

Sealer produces a framework HTML page containing instructions for including the Opener plug-in in the rendered page. The page also specifies the .nnd file that tells Opener which target package to use.

When a browser retrieves the Web page, the page triggers Opener, a plug-in that you must install before the client-side service can function. Opener receives and unpacks the package and optionally executes the specified application.

If the package already has been downloaded, Opener checks that all package and file versions are current. If the package needs updating, Opener asks the user to confirm execution of the update. Otherwise, it launches the optionally specified application.

Importantly, NobleNet Web retrieves data from the Web server via HTTP. This means NobleNet packages can be downloaded even if firewalls sit between the user and the Web server.

Before you can use NobleNet Web, you'll need to update the Web server's list of Multi-purpose Internet Mail Extensions (MIME) types. This is the mechanism used to define the content of HTTP datastreams so the browser will not try interpreting the data Opener wants to retrieve.

The noble user

Once you've configured the server and assembled the package, users can retrieve the associated Web page. After that, the icon on the button displayed by the plug-in and the action taken when the button is clicked will be determined by whether the user has downloaded the package previously and whether the package needs updating.

The logic is to download the package if the application is new or if a new version of the application is available and requires an update, or if the user requests an update.

A postman icon indicates that the user needs to download the package. If the download fails, the icon displays a question mark.

If a file was specified to run when Sealer created the package, the file will be decompressed, installed and executed upon completion of the download.

When the Web page is reloaded after a successful download and an update isn't required, the user sees an icon of a running man. This indicates that the application can be executed.

If you want users to be able to run the specified application in a downloaded package without using the Web browser or want to allow them to delete packages, you need the Application Manager. This utility also lets users remove specific packages when needed.

Not completely noble

NobleNet Web has great potential, particularly because of its ability to transfer any file sets to intranet clients. However, it would benefit from a number of improvements, including better documentation, support for other platforms and the ability to distribute downloaded files to multiple subdirectories so any files on the client system can be updated.

As some prophets say, intranets might take over the IT universe. But I bet the real nature of intranets will be an amalgam of current IT systems with new Web services. NobleNet Web can make that hybridization a bit simpler.

PRODUCT CAPSULE

Name:	NobleNet Web
Current release:	Version 1.0
Price:	$1,000 per developer for unlimited distribution of the Opener plug-in and Application Manager.
Requirements:	Windows 3.1 or later for Sealer and Application Manager; Navigator 3.0 or later or Internet Explorer 3.0 for Opener; any Web server for storing packages.
Vendor:	NobleNet, Inc., Southborough, Mass.
Contact information:	Phone: (800) 250-6427 E-mail: nnweb@noblenet.com Web: www.noblenet.com

PROS AND CONS NobleNet's NobleNet Web

Pros	Cons
▶ Simple to implement and use	▶ Only for Windows
▶ Includes error checking, compression and security	▶ Documentation is weak
▶ Affordable	▶ Needs user interface and functional improvements

SUMMARY: A unique and useful tool that provides a simple and effective application distribution system for intranet environments.

RATING

Value for money	4
Intranet usefulness	4
Quality	3
Overall	3.6

1 is poor and 5 is excellent.

Management tools get with the Web

BY PEGGY WATT

Good intranet-aware, if not entirely intranet-oriented, administration tools crop up early and often on intranet managers' wish lists.

Lacking these tools, intranet managers most often use a combination of LAN management and Web server tools. While the former can be useful, they aren't always Web-oriented, and the latter don't necessarily deal with the network.

The perfect, comprehensive internal Web management tool may yet be in development, but less than a year after users expressed this wish in our "Get tooled" feature (*IntraNet*, Sept. 1996, page 30), the field is much greener. And maybe it isn't an all-in-one intranet administration tool intranet managers really seek. Some interesting, useful utilities offer management functions for specific, intranet-oriented tasks.

This product flurry and the evolving status of most intranets shouldn't stop IT managers from implementing good intranet management techniques today, says Evan Quinn, an analyst with International Data Corp., a market research firm in Framingham, Mass.

"We cannot ignore the huge impact the participation of common corporate Web users in Web application development will levy on application development manageability," Quinn says. As co-author of IDC's recent "Web Object Management" research study, he suggests Web- and object-oriented software configuration management will comprise the bulk of the management tools used by the year 2000.

The following is a sampling of tools newly shipping this month.

Management essentials

Atlanta-based XcelleNet, Inc., known for its remote access tools, recently unveiled a suite of intranet-oriented management utilities called NetEssentials. Two of the first components of the line are RemoteWare 3.2, a Web-enabled version of its remote access program, and SessionXpress, an automated session manager.

Administrators can use SessionXpress, which tracks and logs user sessions, to deliver content or applications. When a user accesses a designated Web site, scripts written in Java or C++ and running in the background can trigger file downloads.

XcelleNet is focusing on system and application management, says Corey Smith, president. The utilities are for enhancing, not replacing, LAN management tools, he adds.

The program supports Web-based content or any data format. "We're trying to combine administration of Web applications and existing client/server applications," Smith says.

Other NetEssentials utilities will include WebSubscriber, for offline data collection; Installer, specifically to distribute executable programs in bulk; Channel Manager, an optional central administration interface for the collection; and MailXpress, an E-mail system with enhanced security.

Resonate, Inc. in Mountain View, Calif., is another vendor building on existing tools. In this case, however, network operating system functions serve as the base.

Resonate has updated its Dispatch distributed server management program with additional load-balancing capabilities. The update, called Dispatch 2.0, enables several servers to appear and be managed as one. The servers, which can be geographically dispersed, can share an IP address.

The program routes a browser inquiry to the least busy server containing the requested information, says Michael Schafir, vice president of marketing. The management interface, called Dispatch Manager, is a Java application that administrators can run remotely. The administrator can designate routing or set weights and guidelines, letting the system monitor activity and route user access on the fly.

The initial version, released in January, ran only on Sun Microsystems, Inc. Solaris; Dispatch 2.0 supports Windows NT servers.

In conjunction with the Dispatch 2.0 release, Resonate is shipping InSite, a Web management tool that monitors site usage for diagnostic and troubleshooting purposes and lets managers set thresholds for alerts. Dispatch Manager provides the management interface for InSite, too.

New Moon Software, Inc. in Santa Clara, Calif., also provides a management tool that stretches existing networks. The product, called Liftoff 1.0, redistributes Windows applications so they reside primarily on a server but appear to run on the desktop, similar to a network computer (NC).

Essentially, users can invoke applications as well as access Web pages through a browser, but use the server's power instead of local processing, says Kate Quackenbush, marketing director. The Liftoff software itself resides on the client and the server, and partitions Windows applications across the systems. The client must support 32-bit Windows but otherwise can have minimal resources, so the program essentially enables NC-style efficiency.

The functionality is similar to that offered by Coral Springs, Fla.-based Citrix Systems, Inc., which for several years has marketed technology that essentially expands Windows NT's LAN functionality to a WAN. Microsoft Corp. has even licensed Citrix WinFrame for some bundling promotions. However, Citrix integrates tightly with the Windows kernel, while Liftoff doesn't touch the operating system code. Instead, it runs at the API level, Quackenbush says.

Express management

WRQ, Inc. in Seattle has applied technology it acquired from its purchase of network management tool maker Express Systems, Inc. in its newest product, Express PageMeter. Although some of Express PageMeter's functions are best-suited to an external Web site, the product can still be useful for an intranet.

Basically, the software monitors what people are viewing and doing at a given Web site. It builds on Express Systems' server activity monitoring tools, which work with Microsoft's Systems Management Server. PageMeter works with Microsoft's Internet Information Server.

Express PageMeter can identify proxy and browser caches to ensure more accurate access counts, and tracks the length of time a user spends on a page. The program can produce reports tallied by categories such as time and date, user domain and browser type.

WRQ is targeting managers trying to determine where to allocate resources for best effect. A human resources department, for example, could use Express PageMeter to see whether employees are using online resources, which material they use most often and even the path that routes them to the Web site.

Perhaps best of all, several of these intranet utilities borrow a favorite feature of Web applications: Trial versions are downloadable free of charge. If intranet administrators are experimenting, so, perhaps, are the vendors.

INTRANET ADMINISTRATION

The following is a sampling of intranet-aware management utilities:

Company	URL	Product	Price
New Moon Software	www.newmoon.com	Liftoff	$4,995 for 10 concurrent users
Resonate	www.ResonateInc.com	Dispatch 2.0; InSite	Starts at $7,995; $7,500
WRQ	www.wrq.com	Express PageMeter	Free at www.pagemeter.com
XcelleNet	www.xcellenet.com	SessionXpress; RemoteWare 3.2	Starts at $4,995, with free trial version available; starts at $5,500 per server and $200 per client

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Circle Reader Service #12

XML: Moving toward richer, smarter Web pages

BY TIM BRAY

People even remotely involved with intranet development know the acronym HTML. The same can't be said for XML — at least not yet.

For those who don't know, XML stands for Extensible Markup Language. It dates back slightly more than a year, to when the World Wide Web Consortium (W3C) authorized the creation of something called the SGML Activity. Nobody noticed.

XML broke the surface last November with the release of the first language specification. One or two people noticed.

In February, Microsoft Corp. and Netscape Communications Corp. became publicly interested in XML. Now a lot of people are noticing.

Here's an explanation of why XML was built, what it looks like and how it can be put to practical use on your intranet.

XML is a drastically simplified subset of the W3C's Structured General Markup Language (SGML). It provides what's needed to make intranet applications run smarter and faster. On an intranet, XML will enable two capabilities notably absent from today's Web technology.

XML will make intranet data much easier to manage, because it will be much richer and more self-describing. And it will enable the development of smarter, faster applications by transferring processing from the generally overloaded server to the often underworked desktop PC.

Why XML?

Web technology is great because it's easy. Users don't need any training in how to make it go, and information providers can get Web-based applications running on intranets in no time.

But Web technology also is a pain, because it's stupid and slow. It's stupid because it turns a powerful desktop PC into a dumb batch terminal. It's slow because to get any work done you have to send a batch of information across the network to the server and then back to your desktop.

These problems can be solved by downloading some of the processing work to the fast PC sitting in front of the user. That way, the application code on the desktop can respond instantly to each user keystroke and can do at least part of its work without network round trips to the server.

One of the key strategies for solving this problem is the use of smarter data.

Intranets mostly run on HTML, which does a great job of displaying documents and graphics. It comes with a fixed set of tags and structures optimized for this purpose. This is fine, but what if you want some indexing information, or want to identify part numbers, or inventories or date of employment in your intranet data? HTML just doesn't do this, and won't.

This is what XML is all about. Rather than providing a set of predefined tags, XML requires you to define your own. This means the documents on your intranet become richer, smarter, customized to your needs and ready for use by your applications.

Technical highlights

While XML is actually a simplified version of SGML, you don't need to understand SGML to understand XML. This is good, because SGML is incredibly general, flexible and hard to understand. XML takes the most commonly used parts of SGML and packages them in an easy-to-understand way.

With XML, document components are marked with tags and attributes, just as in HTML. You can invent your own tags and attributes and, if you want, share them and control their use with a formal declaration called a Document Type Declaration. What's more, XML is designed so it's incredibly easy to write programs to read and extract information from XML files. A good programmer can whip up such a program in a day.

In addition, XML has built-in facilities for reusing shared information in multiple documents or multiple times in one document. It also handles all the world's alphabets, based on the Unicode standard — you can mix Arabic, English, Japanese and Russian with no problems.

Unlike HTML, XML doesn't have built-in tag formatting, since there are no built-in tags. So to present XML on screen or paper, you have to write a stylesheet. In fact, XML wouldn't be useful if not for the arrival of Cascaded Style Sheets (CSS) on the Web technology scene. (For a Handbook on CSS, see *IntraNet,* August 1996, page 10).

CSS control the display of Web pages by using an external stylesheet rather than built-in tag behaviors. Since XML has no built-in tag behaviors, you have to have stylesheets to display it at all. But page creation is much more flexible and sophisticated.

XML also requires another new Web technology — Dynamic HTML. One of XML's main purposes is to allow programs running in the browser (Java or ActiveX) to access and manipulate the data you send over your intranet. Up until recently, with the announcement of Dynamic HTML from Microsoft and Netscape, browsers didn't make this possible.

While Dynamic HTML addresses the problem, the two companies' versions are incompatible. The good news is that they are now working

ASK DR. INTRANET

Please step in and lie down, Steve Blass is in for consultations. He understands the strains felt by people developing and managing intranets. Send your problems to dr.intranet@paranet.com.

Doctor, now that I've built my intranet, how do I ensure that it is alive and well?

Well, gather operational data and calculate metrics to gauge your intranet performance. In a small environment, that might mean asking everyone how things are running. In other cases, it might mean counting the number of pages system administrators get. Other things to watch are help desk calls and trouble tickets.

Proactive network management and performance tuning are more elusive, but worth the effort. These processes follow the logic that to manage it, you need to be able to measure it. So you need definitions of required performance and service levels.

Once defined, valid performance measurements require accurate data. Sniffers and sniffing software like tcpdump and the good old ping technique can tell you a lot about how the network is performing. SNMP monitoring and management tools can probably tell you everything you need to know about your network.

Lastly, management processes that deal with the data are key. Informing users of troubles at their desktop before they call the help desk requires considerable time, effort and dedication.

How do you decide on a firewall?

Do so carefully and begin with the realization that you're making choices that fundamentally impact security policy and network connectivity. You're also setting yourself up for a false sense of security if you don't physically disconnect every other pathway across the protected boundary. A single firewall on a network interconnection often consists of three separate machines: router — firewall — router.

Look long and hard at what you want your firewall to do. Typically, the needs are for mail service, Internet access and perhaps some limited incoming Internet connections. Unfortunately, each of these represents a real risk. But just saying "no" to internetworking is no fun, let alone practical.

The firewalls mailing list is a great place to collect opinions about the various products, and consider the Internet Firewalls FAQ, available at ftp://ftp.tis.com/pub/firewalls/faq.current, required reading.

Blass is intranet services technology leader at Paranet, Inc., a distributed computing systems services provider based in Houston.

XML is a drastically simplified subset of the W3C's SGML, providing what's needed to make intranet applications run smarter and faster.

Microsoft and Netscape became publicly interested in XML, and now a lot of people are noticing its development.

browser that is capable of processing XML, CSS and the DOM, we'll have a richer and cheaper application delivery environment than we do today.

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ject, security rating, pricing information, copyright coverage — anything that is about the document but not part of it.

HTML doesn't offer a good place to store metadata. But since XML is extensible, metadata is easy — you just make up whatever data you need to manage your intranet properly. Thus, professional document management and retrieval is immensely easier for XML documents.

The big win with XML, though, is that you can write smart applications that make the best use of the browser and the desktop PC, without requiring server intervention for most tasks.

Imagine you are building a human resources application that allows retrieval and update of records based on data such as name, age, date of employment, salary, location and department. You can build an application like this right now on the Web, but since HTML doesn't have tags for any of these fields, you have to go back to the server every time you want to do any real work, even if all you want to do is to re-sort the records on your screen by age or department or date of hire.

With XML, all these items of information can be marked up as what they are, and a Java program running in the browser can do all sorts of useful analysis, sorting and selection without involving the server. The result is a much smarter and faster intranet application.

Furthermore, since Java code is portable and downloaded on demand, you haven't lost the benefits of the uniform low-overhead browser delivery environment.

Tool and resource issues

For XML to become more than just an idea, tools are needed for authoring,

READ ALL ABOUT IT

intranet newsgroups

BY DANIEL DERN

An intranet probably isn't the best place for many Usenet groups, but it can be home to select Internet news forums and various internal newsgroups.

Given the inane, bizarre and even disturbing content found in many of the 17,000-plus public Usenet groups, intranet managers might be tempted to dismiss newsgroups as low-value tools.

But internal newsgroups are different beasts than the untamed Internet news forums. The audience is smaller and known, so it can be reined in if need be. And content can be kept relevant to the work at hand.

At intranet pioneer Schlumberger, Ltd., a $7.6 billion multinational oil-field services company, for example, the more than 80 newsgroups on the corporate Web carry subhierarchy names as specific as slb.oilfield.production.geophysics. The newsgroups provide a simple, low-cost tool for shared conversations among specific workgroups or the employee population at large, and they offer an easy way to distribute and archive information without cluttering mailboxes.

At Schlumberger, as at other companies, newsgroups complement basic Web pages and electronic mailing lists with bulletin-board-like messaging. Programmers might post test logs in one newsgroup while employees share restaurant reviews in another.

Even if postings are infrequent, the newsgroups serve a useful purpose, says David Sims, IT technical manager at Schlumberger in Houston. "You can't quantify the value of having an archive of information. You may only look at it once every six months, but you may then browse two years of discussion."

Schlumberger is just one of many companies turning to internal newsgroups as easy-to-implement, low-cost corporate information assets.

Fruitful forums

At Fruit of the Loom, Inc., programmers head to ftl.java, salespeople to ftl.activeware.internet and everyone to ftl.forsale, says Paul

Hart, a software research analyst at the Bowling Green, Ky., company.

"We use newsgroups for project groups, mainly for self-documentation," Hart says. "For example, whenever we have a big WAN change, we send e-mail to everyone in the [IT] department, but also post the announcement to a newsgroup so it's archived."

Fruit of the Loom brought its first newsgroup online just 10 months ago, but already has nearly four dozen internal forums, Hart says. He estimates that one-third of the 1,500 employees with Web browsers regularly read one or more of these internal newsgroups.

By today's hyperactive Usenet standards, the ftl.* newsgroups are not overly chatty or active. Hart estimates an average of 10 new postings per day. Some days as many as 50 messages might be posted, while on other days there would be no activity.

Not all ftl.* newsgroups serve a large audience; some are meant for as few as five or six people, Hart notes. Reading vs. posting privileges vary depending on the nature of the newsgroup, he adds.

Fruit of the Loom also brings in selected Usenet groups for access from the intranet. Those news forums include the biz.* (business), comp.* (computing), ieee.* and sci.* (science) hierarchies. "We have a standing policy that we'll also get anything else if it's applicable to work," Hart says.

Bring on the news

To create an internal newsgroup or provide access to a Usenet group, a company needs to install a news server, such as the free InterNetNews (INN) for Unix environments or, in the NT arena, Microsoft Corp.'s Internet News Server or Netscape Communications Corp.'s Collabra Server (which replaces the company's News Server).

Not surprisingly, many organizations use the INN server, the source code for which is supported by the Internet Software Consortium, a nonprofit organization. Paul Vixie, president of Vixie Enterprises, an engineering, consulting and technical services company in La Honda, Calif., even estimates that 99% of Usenet sites are running INN.

Besides being free, INN is easy to install, Vixie says. "It shouldn't take a Unix-savvy administrator more than two hours on the average" to install and configure INN, he adds. "The documentation is pretty good."

Specifically for intranet newsgroups, the news servers from Microsoft and Netscape are popular choices. Reasons range from feature sets to familiarity with the vendors' other intranet servers. Fruit of the Loom, for instance, standardized on Netscape servers.

News servers use the Network News Transport Protocol (NNTP) to transmit posted messages among themselves and between them and the client news reader program.

Microsoft's Internet Explorer and Netscape's Navigator browsers include news reading capabilities, which means support for NNTP and the ability to browse and create messages using the Usenet article format. Other newsgroup client programs, which provide a bit more flexibility, are also available.

Someone to watch over

Although less likely to be as wild, whacky and uninhibited as their external Usenet cousins, internal newsgroups need at least a modicum of management and oversight. That said, administration of internal newsgroups appears reasonably open and flexible at companies that have ventured into this arena.

"If somebody wants a new newsgroup, and can tell me who it's for, I make it," says Fruit of the Loom's Hart, adding that he's not aware of any inappropriate usage. "People are pretty selective in what they put out. They're aware that, unlike e-mail, these [messages] are easily available to everybody."

At Schlumberger, a systems administrator needs to create the newsgroups because they usually reside on Unix servers. "But there's no formal policy regarding who can or can't [have a newsgroup]," Sims says. Nobody specifically monitors or oversees what goes on in the slb.* newsgroups, "but if somebody were to complain, line management would get involved."

At Bay Networks, Inc., IS trains the people who are responsible for intranet resources, including internal newsgroups, and then oversees their operations, says James Chung, IS manager for Web services. Training includes information on message management and keeping a forum, he adds.

Although easy to create and participate in, newsgroups aren't the be-all and end-all in discussion forums available for intranets.

Bay, for example, uses newsgroups primarily as departmental and business unit tools, not for companywide activity, Chung says. "We have one group for the East Coast engineering department and about two dozen for other company activities."

For companywide information such as internal classifieds, Bay has deployed Digital Equipment Corp.'s AltaVista Forum software, a Web-based discussion tool. It's also looking at Netscape's upcoming Collabra groupware products because of features such as support for the Lightweight Directory Access Protocol and security.

Some other newsgroup alternatives are Digital's VAX Notes, Lotus Development Corp.'s Notes (which has some cross-compatibility), sundry Web-based discussion forums and other groupware products. Some groupware, such as Collabra, can support newsgroups, too.

Newsgroups are tremendously powerful, but would be even better if they integrated groupware functionality such as calendaring, says Robert Raisch, founder and chief scientist of The Internet Company in Cambridge, Mass.

As one of the first major Web site developers, it's no surprise that The Internet Company makes use of internal newsgroups for its several dozen employees. It runs the INN for hosting groups such as .announcements and .gossip, plus project-related groups and a group for marketing.

Not for everybody

Not all attempts to use internal newsgroups prove viable. Xerox Corp., for example, has had trouble getting employees to participate in such forums because they've acclimated themselves to mailing lists, says Malcolm Kirby, manager of the company's Office of the Intranet.

"We've tried to move some of the global mail distribution lists into news environments, but the user uptake has been minimal," says Kirby, attributing some of this reticence to users' expectations for the immediacy of information.

"Today, where people have their mail client all the time, they can process information immediately. They don't have to bother logging on to the news server, pulling down information and reacting to it," Kirby says.

New tools that integrate news and other information-sharing functions hopefully will bring changes, Kirby says. "Users will probably get used to 'news-browsing' as long as the content is useful and the navigation is easy."

Indeed, it's clear that plain vanilla newsgroups are rapidly being joined, and in some cases supplanted, by these more sophisticated, broad-focused tools. Companies only now implementing intranets may go this route, bypassing Usenet technology.

On the other hand, newsgroup software is an affordable (it's free) and easy-to-install alternative, and Usenet-like newsgroups are well-understood by millions. Internal newsgroups aren't likely to disappear any time soon.

CREATING NEWSGROUPS

You can't run an internal newsgroup or bring in a Usenet feed without setting up a news server. Here's a sampling of news servers:

Server	Vendor	Contact information	Platforms	Comments
InterNetNews server	The Internet Software Consortium	www.isc.org, www.vix.com or ftp.vix.com	Most common Unix platforms	It's free and is the most prevalent Usenet server.
Collabra Server	Netscape	(415) 937-2555 www.netscape.com	Windows NT, major Unix versions	It replaces Netscape's News Server. New features include authentication and content encryption, as well as support for user-created and -administered newsgroups and "virtual newsgroups."
NewsChannel	MetaInfo	(206) 674-3700 www.metainfo.com	Windows NT	
Internet News Server	Microsoft	www.microsoft.com	Windows NT	
[illegible]	Imagina	(503) 224-8522 www.imagina.com	MacOS on a PowerMac	This is the only NNTP server available for MacOS.
[illegible] NetForum Server	NetManage	(408) 973-7171 www.netmanage.com	Windows NT	This server was previously known as a freeware product called NNS.
[illegible]	NetWin	www.netwinsite.com	Windows NT, Win95, Mac, OS/2, Linux, Solaris, VMS	

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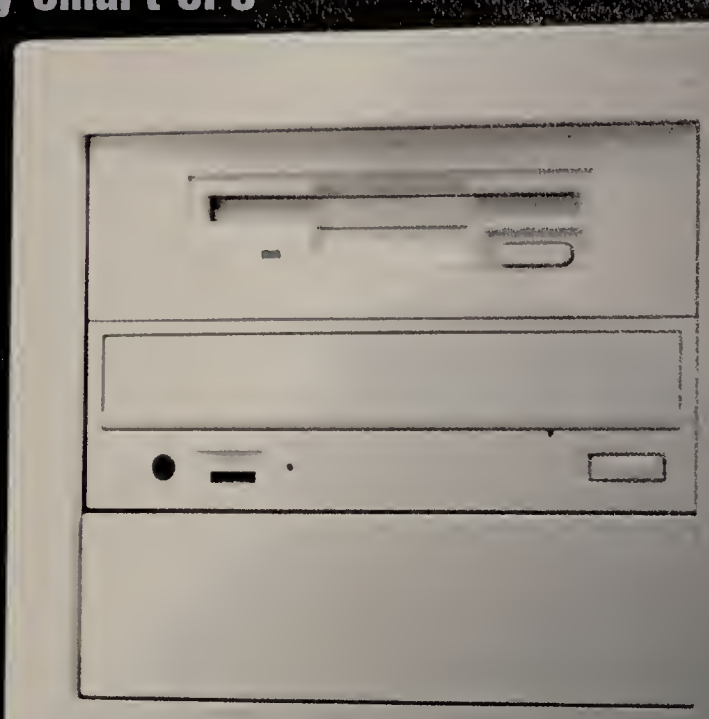

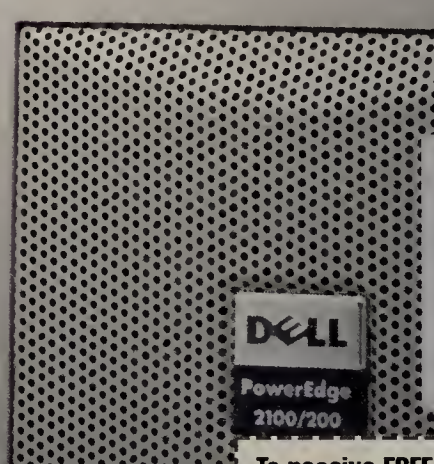

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Sandra Sully, Xilinx CIO, understands that allowing business partners into the company's Web is vital, but greatly increases the company's vulnerability.

Chip maker Xilinx began building its intranet with a specific goal of allowing business partners to travel to and pull down information from select pages.

Opening the gate

BY PEGGY WATT

Unlike most intranet builders, Xilinx, Inc. designed its corporate Web with a front gate that swings open to accommodate access by far-flung employees and independent sales representatives.

In fact, a key reason this San Jose, Calif., microprocessor company decided to build an intranet was to improve communications among its worldwide locations and the more than 400 independent representatives it contracts with for sales.

Of course, the internal Web — Crossroads — supplies the typical useful mix of workgroup, departmental and corporate home pages. But it also includes an extranet component, Partner Web.

Xilinx is truly a virtual corporation in that it's an organization not defined or constrained by physical boundaries. Besides relying on highly technical outside salespeople, some of whom only represent Xilinx, the company maintains a network of about a dozen manufacturing partners. At each of these partners, several people deal regularly with Xilinx.

Xilinx posted $560 million in revenue last year selling programmable logic devices. Its specialty is field-programmable gate arrays — logic chips customers can reprogram rather than returning the chips to a fabrication plant.

Programmers in Boulder, Colo., Edinburgh, Scotland and San Jose, collaborate on chip development, then run their work past test facility engineers in Dublin, Ireland. Security is crucial, not only to keep competitors from viewing the communications among Xilinx programmers, but also to keep competing distributors from seeing each other's correspondence with Xilinx.

"I call this 'controlled chaos,' " says Sandra Sully, vice president and chief information officer, of the challenge in maintaining access rights for so many different organizations dealing with many of the same resources in Xilinx's intranet and extranet.

Sully joined Xilinx less than two years ago, charged with creating a "simple and ubiquitous" network of resources.

Adding meaning to the madness

To communicate with its far-flung employees and associates, Xilinx has, for 13 years, relied heavily on a combination of e-mail, fax and overnight mail. About two years ago, management decided it needed a one-stop network interface that partners and employees could use to access the corporate resources. The new system had to handle information as diverse as sales brochures and programming code, and it had to provide the means for teams to straddle time zones and distance in their collaborative projects.

What's more, Xilinx wanted to make information easily available internally and externally, on a selective basis, through a single interface.

A Web interface is ideal because Xilinx supports a variety of user platforms internally and, of course, has no control over what software is used by the large number of nonemployees who need to communicate with the staff, Sully notes.

Inside the company, IT supports approximately 600 Sun Microsystems, Inc. computers running Solaris, in use as engineering workstations by programmers and to manage financial databases on the business side. Most nonengineers use the company's 1,600 Windows PCs, but the company also has about 75 Macintosh systems.

Appropriately, Xilinx's intranet also is distributed.

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Xilinx houses the centerpiece, Crossroads, primarily on a Solaris TCP/IP-based internal corporate network. The extranet component, Partner Web, runs on servers owned by an Internet service provider. Crossroads and Partner Web pages point to Xilinx's public Web site.

Xilinx relies heavily on Netscape Communications Corp.'s software, including the SuiteSpot server applications and the Navigator browser.

Local and remote employees enter Crossroads through a password-protected home page residing on a LAN-attached Sun UltraSPARC in San Jose. The firewall in Xilinx's Netscape Communications Server protects the intranet from unauthorized entry through the Web. Solaris' network management tool kit manages the logon and password access procedure.

Tending the gate

Distributors and sales reps use their Internet access accounts to enter the extranet, then key in a Xilinx-supplied logon and password from the home page. Clicking on the appropriate category — North American Distribution, North American Sales Partners, International Sales Partners or, by summer's end, Manufacturing Partners — brings them to their own section of the extranet. Many of the subsequent pages are the same for each group, but some information is tailored to the type of partner.

When Partner Web users access pages developed for Crossroads and maintained by corporate gatekeepers, they're actually seeing a replicated copy of the page housed on the ISP's server. Xilinx does this strictly for security reasons, Sully says.

Xilinx eventually will invite partners into portions of Crossroads directly. For that purpose, Sully's staff is building a demilitarized zone (DMZ), hoping to expand the extranet by the end of this year. Through a series of firewalls and directory-level restrictions based on the Lightweight Directory Access Protocol, Xilinx will strictly control user access and keep the gates closed to employee-only sections.

But even the current gateway opens many new paths for the sales reps. Time zones or distance are no longer constraints on checking product information, obtaining collateral or "talking" with other Xilinx reps. The sales force especially likes the wealth of online presentations they can download and then tailor for use in their sales calls.

"Before, I would have to call Xilinx to get a floppy or hard copy," says Russ Sinagra, a supplier and business manager for semiconductor distributor Hamilton Hallmark, a division of Avnet, Inc. in Great Neck, N.Y. "I can customize the presentation for my customers but still present the information the way Xilinx wants."

Sinagra also notes he can get information for customers more quickly. "It makes me look a whole lot smarter," he says.

Sinagra is eager for Xilinx to launch the online order status application now under development for the extranet. "Now we're constrained by time zones and personnel. We have to call, get to a customer service person, and then wait while that person gets the information from the computer and then tells us. Soon we'll be able to just dial in and get information in real time."

Sinagra says Xilinx is "definitely an innovator" among the chip manufacturers with whom he and his colleagues work. He credits Xilinx with asking questions first and then building. This results in a useful product.

"Xilinx asked for a wish list from the field," Sinagra says. "Then it was able to start rolling out some resources quickly, on the basis of what it could easily make available." Speaking of his experience as a beta tester of Partner Web, he says, "It seemed like every day Xilinx was telling me to try something new."

This summer, Xilinx expects to launch an extranet application that lets its partners register their software licenses online. They'll enter the quantity and usage information in a series of forms on Partner Web. Xilinx will still accept registration by telephone, but sales reps who saw a demo of the online registration at their April conference were enthusiastic, Sully says.

Although Partner Web is key to the overall usefulness of Xilinx's internal Web, having an extranet is also a vulnerability, Sully says.

"Our biggest challenge was when we opened our information to our partners," Sully says. They needed access, "but we didn't want them to have access to everything," she adds.

In fact, Xilinx keeps extranet users on the public pages, housed on its ISP's server, whenever feasible. For example, a sales rep seeking product information may click to access a specification sheet that is generally available, so the link takes that user to the public

SITE SEEING

A step-by-step guide to a key Xilinx extranet query

GETTING UP TO SPEED

A value-added reseller (VAR) wants to help one of his new employees get up to speed on field-programmable gate array technologies in general and on such products from Xilinx in particular. He logs on to the Internet with his own account, then enters the URL for the Xilinx Sales Partners Home Page. A pop-up dialog box requests a logon and password even before the extranet page appears.

1 At the Xilinx Partner Web home page, the VAR manager clicks on the link for North American Distribution to see what's available on these topics in this area.

2 The VAR manager picks "Customer training" under the "Schedules" listing. Although this page is the Xilinx North American Distribution page, similar information is available on pages for other Xilinx partners.

3 He checks the overview of Xilinx training courses available, clicking on any listings to hyperlink to the more detailed descriptions as well as dates and places.

4 Choosing the appropriate seminar, the VAR clicks on a link to jump to the registration page and completes a form online so his new employee can take the three-day course on schematic design.

Web site. Any restricted pages on the extranet bear the company logo and are flagged "Xilinx Confidential."

Teamwork on the intranet

Also integral to both intranet and extranet are collaborative functions. Sully has worked with Lotus Development Corp.'s Notes in projects for other companies and firmly advocates online collaboration.

"I learned from using Lotus Notes that you need to have a discussion facility online," Sully says. "Especially when you cross time zones and geography, threaded discussion is better than e-mail."

Online discussion lets users track their collaborative efforts, jump in and out as appropriate and maintain a record for reference. Crossroads supports dozens of active discussion groups running on Netscape's Collabra Server software. Development teams in multiple locations rely on them to track projects, for example.

Because of Xilinx's emphasis on collaboration, Sully expects to implement many other workgroup tools Netscape is developing, notably the calendar and mail functions provided in Communicator. Her staff tests but does not deploy beta software, so it expects to implement Communicator company-wide this summer, after it ships.

"One reason to choose a Web-enabled mail and calendaring system is the diversity of hardware and operating systems here," Sully says. Her staff also is testing and experimenting with publish/subscribe technology, which Netscape is building into its browser. Sully expects it will be especially useful for distributing applications to employees and customers.

She also hopes to implement video over a 256K bit/sec link Xilinx maintains between its San Jose and Edinburgh facilities. Because of time zone differences, some video recordings would be stored for users to retrieve when convenient. Most of Xilinx's desktop systems have at least 32M bytes of RAM because they've needed that power to access X Window System programs on the company's Unix servers. That makes most systems well-suited for video.

"We're doing software work in Ireland, Boulder and here," Sully says. "More collaborative tools could make us a lot more productive."

The IT staff also is working on ways to make parts of the corporate data warehouse, an Oracle7 database, available on the extranet. Of course, giving outsiders limited access to internal databases raises more security concerns.

Xilinx wants more sophisticated, redundant security products. "All the [security] pieces aren't there yet," Sully says.

Neither is the variety of development tools, Sully adds. Her staff is still experimenting with a number of programming products, trying to find what works best for their intranet application development projects.

Many of Xilinx's intranet/extranet development plans, such as the DMZ and browser-based desktop, are waiting on the release of new products, most of them from Netscape. It took Xilinx awhile to jump into the corporate Web, but now that the company has begun building its gateways, it's eager to keep the construction zone busy.

AT THE CROSSROAD

October 1995 Sandra Sully joins Xilinx as CIO.

December 1995 Xilinx decides to build an internal Web.

1995

July 1996 The Crossroads intranet opens.

April 1997 Partner Web, the extranet, goes live.

1996

Summer 1997 Xilinx plans Partner Web expansion with a manufacturers section.

End of 1997 Xilinx lets partners into a DMZ within Crossroads.

1997

BY JOEL SNYDER

Serving up

Intranet servers may bear the same names, run on like operating systems and share stylesheets and graphics with their World Wide Web counterparts, but the similarities end there. From an architectural standpoint, public and private Web servers should be worlds apart.

For example, if you're establishing an Internet presence, you want a Web server capable of tracking visitors and logging what they do. That's because information such as how people get to the site and how long they stay there can be vital to external marketing and education efforts.

This same information, however, is largely meaningless when it comes to an intranet site created for employees. A Web server loaded with powerful logging and tracking capabilities is probably overkill.

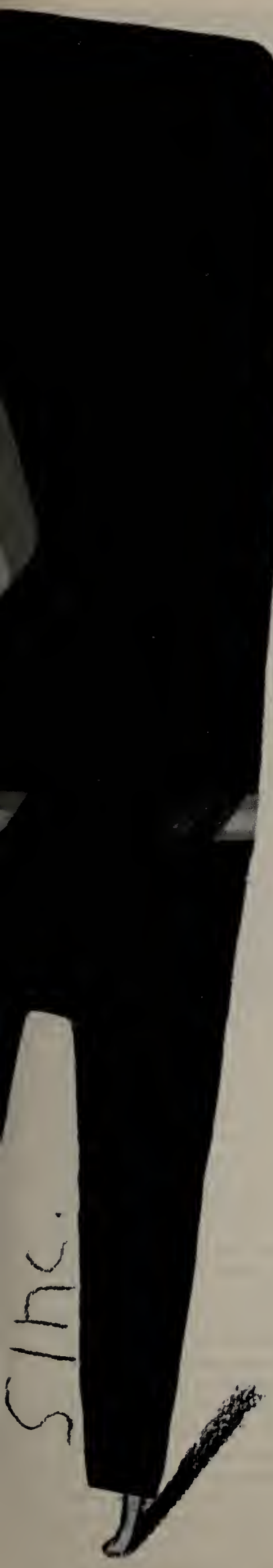
Architecturally, then, what should an intranet server offer? To meet the demands of an intranet, look for built-in, easily accessible protection schemes; the ability to customize and easily modify a server's configuration; the availability of intranet-specific tool kits; a fault-tolerant configuration; ease of installation and management; and simple database access.

Of course, you'll find it difficult to buy one Web server that excels in all of these areas. So depending on the particular needs of your intranet, you might opt for the Web server that's easy to manage rather than the one that easily links to database systems. This buyer's guide will help you sort through the intranet-related purchasing decisions and identify the best-of-breed products in each category.

Security

Intranet servers often need to implement complicated trust relationships found within an organization. The most straightforward way of doing so is with authentication: Tell me who you are and what your password is and I'll give you access to selected areas of the server.

But in an intranet, things are not that simple. Access privileges can be based on who you are, where you're located,



JUGGLING THE DEMANDS OF A RAPIDLY GROWING INTRANET CAN STRESS OUT THE MOST SKILLED IT MANAGER. THIS WEB SERVER BUYER'S GUIDE WILL HELP YOU KEEP YOUR WITS.

intranet apps

what department you work for, what your title is and who you supervise. For security, intranet servers need to be flexible.

This is especially the case if a corporate Web spreads across multiple servers and departments, which most do. Web servers are inherently lonely and solitary beasts — they seldom, if ever, share security and authentication data among themselves without a great deal of application-level programming.

Even within a single Web server, authentication information is usually poorly partitioned. The normal Web server security model calls for one authentication file for each access realm. The authentication files list users and passwords, while the server configuration file links users to permitted areas.

This means a user may have to use multiple user names and passwords to reach different areas of the intranet and would have no convenient way of synchronizing those different access schemes. The traditional user-level security object in a Web server is subatomic indeed.

The exception to this rule is Microsoft Corp.'s Internet Information Server (IIS), which extends Windows NT security — user name, password and, most importantly, access control list features — into the world of the Web. Users authenticate themselves to IIS servers using their Windows NT user name and password. IIS then uses this information to restrict what the users see based on the Windows NT protection model.

At the same time, some of the authentication and security features of public Web servers have little use on an intranet. Traditionally, high-end security for public services such as online banking has depended on a combination of encrypted communications and application-level security, such as an account number or user name and associated password.

In an intranet, this is usually overkill. Server-level authentication is much simpler to add to an intranet than true application-level security. By emphasizing high-end server authentication to meet those needs, products like IIS free the designer of the burden of reimplementing application-level security.

Customization and modification

To add functionality to their Web servers, vendors have implemented Common Gateway Interface (CGI) calls and proprietary APIs. But when building high-end applications that sit in front of executive and management information systems, these may not be flexible, powerful or fast enough.

One area where the flexibility issue pops up often is in preprocessing text. A preprocessor is beneficial because it gives the HTML author the power to build dynamic Web pages without having to write real application code. This lowers development cost and eases maintenance. While all servers have preprocessors of varying power, the nature of highly customized Web-based applications is that out-of-the-box preprocessor capabilities will seldom be strong enough.

Solving this problem usually means either diving into the world of CGI (and API) scripts or changing the preprocessor. The trade-offs either way are significant. Many CGI/API scripts will heavily impact the performance of Web servers. On the other hand, changing the preprocessor commits you to retrofitting those changes every time the vendor releases a significant version of the server.

At times, special applications may require changes in the way the server itself operates. Some of these can be accommodated by CGI or API scripts, while others may mandate changes to the basic server.

If you choose to modify the server, you'll want Apache, a freeware product maintained by Apache Group. Apache is nothing if not popular: It dominates the public Web server space, serving more than 450,000 domains. That's more than Microsoft, Netscape Communications Corp. and O'Reilly & Associates, Inc. combined.

Apache has two advantages: It comes with complete source code, and it is designed to be modified. Apache Group has

DAVID SCOTT SINCLAIR

BEST-OF-BREED INTRANET SERVERS

Capability	Security	Ability to customize and modify configuration	Support for an intranet-specific tool kit	Fault tolerance	Ease of installation and management	Database access
Best-of-breed product	Microsoft's IIS	Apache Group's Apache	Netscape's Enterprise Server and StarNine's WebStar	Netscape's Commerce Server, Process Software's Purveyor and the OSU Web server	Netscape's server family; StarNine's WebStar; O'Reilly & Associate's WebSite Pro	Microsoft, Netscape and O'Reilly servers
Reason	Brings the user name, password and, most importantly, access control list features of Windows NT to a Web server.	It comes with complete source code and is designed to be modified via a plug-in development framework that removes the danger and uncertainty from changing server source code.	Offers dozens of sample applications through AppFoundry; includes more than 100 sample applications.	Run on Digital's OpenVMS, which offers sophisticated clustering technology and security.	The Netscape servers run on a variety of operating systems and offer the strongest and most flexible management interface; WebStar runs on the Macintosh, which is simple to manage; WebSite Pro is well-documented and easy to manage.	They include tools that make the link back to SQL databases with little to no effort.
Contact information	(800) 426-9400, www.microsoft.com/iis/default.asp	(410) 931-3157, www.apache.org/	(415) 937-2555, www.netscape.com; (510) 649-4949, www.starnine.com/webstar/webstar.html	(415) 937-2555, www.netscape.com; (800) 722-7770, www.process.com/purveyor.htp; kcgl1.eng.ohio-state.edu/www/doc/serverinfo.html	(415) 937-2555, www.netscape.com; (510) 649-4949, www.starnine.com/webstar/webstar.html; (707) 829-0515, software.ora.com	(800)426-9400, www.microsoft.com/iis/default.asp; (415) 937-2555, www.netscape.com; (707) 829-0515, software.ora.com

fitted a plug-in framework to the Apache server that makes changing the server simple. Although changing server source code sounds dangerous, Apache removes much of the danger and uncertainty with its development framework.

Intranet tool kit

If you focus on building applications instead of using the preprocessor, you need a server with a good intranet-specific tool kit.

Programming Web applications is no easier than programming any other application — it's just that the graphical user interface (GUI) is simpler, or so it seems. In fact, intranet applications may be more difficult to build as distributed systems, groupware, e-mail and data warehousing projects migrate to the corporate Web.

Intranets have to deliver what large mainframes offered without having the advantages of a single processing domain and a secure local file system. Developers need an intranet-specific tool kit to help build these applications.

One simple example of this is in transaction-oriented applications, such as a benefits program. Since the Web is stateless, maintaining state information across screens in a transaction-oriented application is harder on an intranet than in a standard client/server system. Every screen is a separate transaction; there is no smooth flow from screen to screen. Unlike an application with its own GUI, a Web application cannot depend on an unbroken, continuous link to the user.

The HTTP world offers several mechanisms for maintaining state information. The most controversial is cookies, which provide an insecure way for the server to store state information on the client and to retrieve that information as the client moves through the application. Controversy surrounds cookies because of misplaced ideas of how anonymity works on the Web and the tracking that can happen using cookies.

In any case, intranet applications normally don't have the same privacy issues as their public Web counterparts. But there is a security problem, in that the content of cookies is directly under control of the user and the server cannot depend on cookies staying un-corrupted during a transaction's lifetime.

Another common technique for tracking a single client across multiple screens involves stateful URLs, where every URL is modified to have some state information stashed into it. This is guaranteed to work — until the user bookmarks a page with one of these stateful URLs and tries to go back to it long after the transaction has been closed out. The URL will fail, and the user won't know where to go next.

Cookies and stateful URLs can be useful, but when it comes to building robust applications that have more than a screen's worth of persistence, they're not enough. This is especially true when programmers have to take into account issues such as transaction recovery, integration with authentication systems and database links.

Unfortunately, Web servers take a flat approach to programming: The libraries are there, go ahead and use them.

For many Web developers, site construction begins with a question: "What code can I use as a model?" Intranet programmers benefit from the availability of good tool kits of sample applications along with the associated application source code.

Good examples in this area are Netscape's Enterprise Server, which has dozens of samples in its AppFoundry, and StarNine Technologies, Inc.'s WebStar, which includes more than 100 example applications. Both servers provide fertile ground for the imaginations of Web developers to grow new applications and modify existing ones.

Fault tolerance

As businesses migrate a wide variety of critical applications to Web-based front ends, formerly easygoing Web server managers have to operate as if the business depends on those servers. An intranet server's response time and uptime may be keys to an organization's success.

Business-critical applications require fault-tolerant servers that also have failover capabilities or, preferably, load sharing. All of these characteristics contrast with the rough-and-ready world of the Internet and, consequently, most of the Web servers available.

Microsoft, Netscape and a few other Web vendors promise they can bring "big business" style software to the intranet. However, they have failed to capture the trust of those IT managers who are used to the cradles that traditional computer system vendors such as Digital Equipment Corp., Hewlett-Packard Co. and IBM built for them.

In this case, the server choice isn't as significant as operating system. Windows NT, while popular as a workgroup operating system, does not offer the fault-tolerant and load-sharing features that older operating systems have had for years. NT also has gotten black eyes from defects in its network applications and TCP/IP implementation.

So IT managers charged with building mission-critical intranet applications are turning to their old, solid standbys — Unix and Digital's OpenVMS. (If a good Web server were available for IBM's MVS operating system, they'd likely build intranets on it, as well.)

OpenVMS, which offers built-in clustering technology, is an excellent choice as an intranet platform when rock-solid reliability, failover capabilities and load sharing are required. Netscape's Commerce Server, Process Software Corp.'s Purveyor and Ohio State University's (OSU) Web server run on OpenVMS. The OSU Web server leads in the number of installations.

Digital's back-office operating system also brings another benefit: security. Windows NT has suffered from several deadly network-launched denial-of-service attacks; popular Unix platforms have dozens of published stack-overflow attacks. In light of all this, OpenVMS seems almost miraculously unscathed.

As an alternative to built-in load sharing and fault tolerance, companies such as Cisco Systems, Inc., IBM and Resonate, Inc. offer products that sit in front of a Web server farm directing queries among a set of Web servers and keeping tabs on server availability and load level. With these types of products, a farm of Windows NT servers can appear as reliable as Unix or OpenVMS — although at substantially higher cost.

Easy installation, management

While most public Web servers are maintained by Internet service providers and hosting services, intranet servers may be handled on a department-by-department basis. Many intranets are composed not of one or two big servers but dozens or hundreds of small servers, each operated by a workgroup more interested in its own agenda than in keeping a Web server alive.

In this environment, ease of installation, management and tuning are critical success factors.

One approach to meeting this need is picking a single server that is supported across a wide variety of platforms. If a "corporate standard" can be established, then the help desk can support the Web in the same way it supports word processors and spreadsheets.

Few Web servers run across multiple platforms. The obvious exception is Netscape's family, which offers a relatively unchanged interface across OpenVMS, Unix and Windows NT.

Netscape has a second advantage: Its management interface, done via a Web browser, is the strongest and most flexible among Web servers. Because Netscape's server is managed via HTTP, remote control of a Netscape server is easy. For those who prefer to edit configuration files, Netscape also supports that interface and provides documentation on how to maintain the configuration manually.

A second approach is to simply find the easiest and simplest servers to manage and offer them to users. One unlikely contender for this approach is, surprisingly, the Macintosh. As a computing platform, the Macintosh's legendary ease of use makes it an interesting — if not unorthodox — choice for small departmental servers.

The most popular Macintosh Web server, StarNine's WebStar, shares the idea of a Web-based management interface with Netscape, although direct management from the server console also is possible.

O'Reilly also offers a well-documented and fairly easy-to-manage Web server in WebSite Professional. Although the Windows 95 and NT platforms don't have the hands-off management and tuning style upon which the Macintosh builds, the idea of putting workgroup Web servers on commonly used platforms may be comforting.

No matter what operating system platform or server is chosen, departmental server managers will need advice on tuning and cleaning the server. Because Web designers are loathe to give up precious hit logs, procedures for removing and archiving old logs are key to long-term health of the server.

Where the platform supports it, automated procedures to roll over log files will be a great help.

Database access

Application developers are turning to Web-based technologies and intranets to break through the MIS logjam around corporate information systems. Thus intranet applications often need to retrieve, store, manipulate and report on information that is stored in corporate database systems.

Easy access to databases can be the key to building powerful intranet applications. A simple way to blend HTML and SQL into Web pages is vital.

The goal is to be able to let a Web page display the results of a query accurate at the moment the page is loaded. Similarly, integrating HTML forms and SQL queries without requiring scripts brings the intranet designer additional power at low cost.

The big three Web commercial server vendors — Microsoft, Netscape and O'Reilly — include tools in their servers that make the link back to SQL databases with little or no effort. These servers depend on a robust SQL interface.

Unfortunately, some legacy databases won't have such an interface, or won't work with these Web servers. In this case, the specter of middleware looms large, with high-priced products designed to push out true legacy data to the Web browser. These range from the useful to the truly sublime, such as Teubner & Associates' 3270-to-HTML converter.

The bottom line

Few intranets are small and simple enough to live on a single Web server, or even a single Web architecture. And each intranet application comes with a set of requirements that begs for one particular server or another. Knowing the differences among Web servers can make all the difference.

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Document domains

Choosing between managed and freestyle chaos

BY PAUL KORZENIOWSKI

An employee in New York writes a definitive memo outlining how the rules of automobile marketing have changed and posts it on the intranet seeking input from other account executives. They add their opinions, post supporting documents and graphical data and even append images taken from successful marketing campaigns.

Eight months later, a coworker in Los Angeles has a chance to snag a lucrative ad campaign from an automotive giant so he logs on to the intranet looking for anything that may help.

The search turns up what has by now turned into a treasure trove of information, including a history of everyone who has contributed to the thinking and a trail showing who updated the data and when. Essentially, it's the company's collective wisdom about automobile marketing and a history of how it has evolved.

Is this nirvana attainable? No and yes.

Although intranets have grown into rich document repositories that can be sifted through using powerful search engines, to achieve all the capabilities described you need to integrate a traditional document management system.

In fact, as intranets grow in scope and size, the increasingly complex job of keeping tabs on information will encourage users to push more content into managed corners of their intranets, leaving fewer documents floating around in what Wayne Bush, a computer systems architect with Allied Signal, Inc., calls "freestyle chaos Web directory structures."

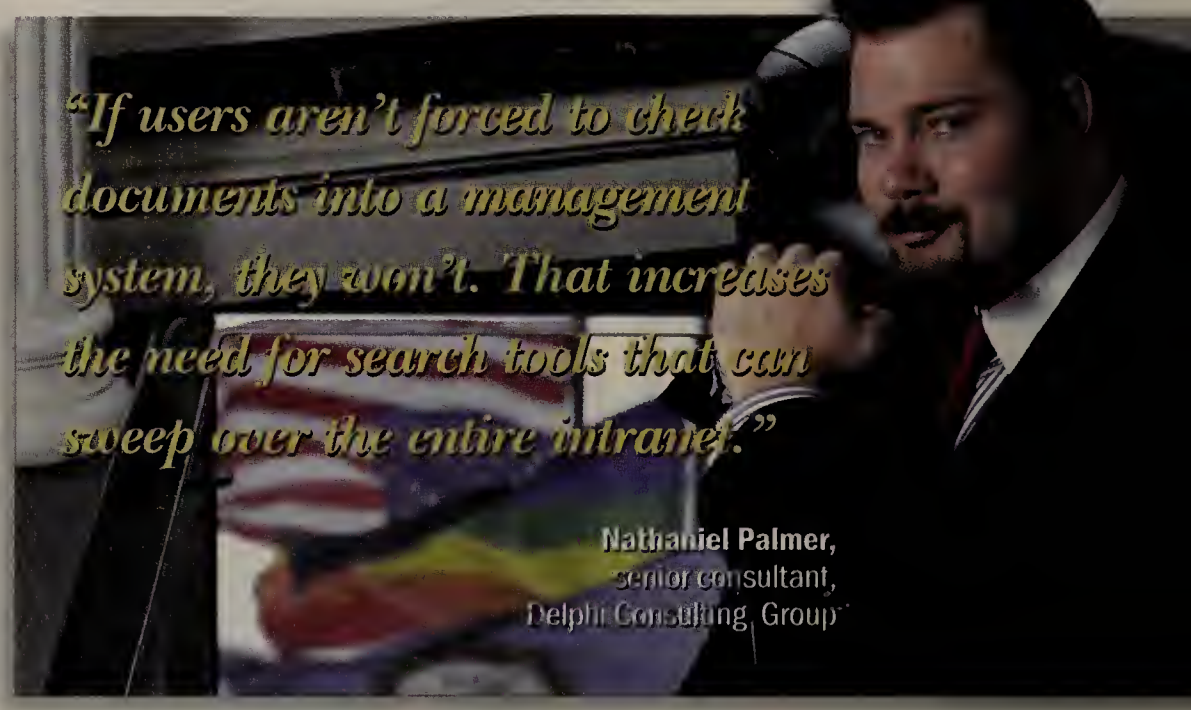
Bush, who works at the company's engineering division in Phoenix, believes document technology ultimately will eliminate the practice of storing content in the directories of the Unix or Windows NT boxes on which Web servers run. "In two years, it won't be cost-effective to run file structure Web sites because they require a great deal of human resources to manage," he says. Modern document management systems automate many Web site management tasks, including keeping hypertext links intact.

Two houses

Near term, however, intranets typically will consist of two document domains, the freestyle domain in which casual, more ephemeral documents live, and the highly structured, controlled document management domain.

While the former lacks many capabilities of the latter — including the basic ability to modify documents and then restock them — the search tools that help make intranets simple document libraries are getting more sophisticated.

Text retrieval suppliers are enhancing their products on a number of fronts. New fuzzy search capabilities, for example, let users find information even if they don't know how to properly spell the term for which they are searching. And the engines identify verb and noun nuances: entering "buying stocks" will pull up "bought stock" and "buys stocks" references.



Search engines designed to pull information from textual material, such as a memo, now also can gather multimedia items, such as graphics and pictures.

An unfortunate by-product of these and other new features is that a simple search can create an avalanche. "If a user enters a simple query and 10,000 documents come back, is he really any better off than he was before?" asks Bruce Duff, vice president of sales and marketing at Information Dimensions, Inc., a Dublin, Ohio, document management system supplier.

Probably not, so vendors are trying to increase the intelligence of their systems by developing sophisticated techniques to rank document relevance. For instance, a system may be programmed so that when it finds a keyword in a headline, it places more relevance on the document than one in which the word comes at the end of the text. That is a key attribute of Verity, Inc.'s text retrieval product.

Added control

Full-fledged document management systems enter the picture when companies need greater control of mission-critical documents such as aircraft maintenance manuals.

These systems — provided by companies such as Documentum, Inc., Information Dimensions, Interleaf, Inc., Open Text Corp., PC Docs, Inc. and Saros Corp. — come with integral text retrieval capabilities. In some cases, the vendors build the retrieval engines themselves, while in others, they simply incorporate one from a text retrieval specialist.

Whereas a text retrieval system helps find documents, a document management system helps control them. It regulates access to documents, monitors who uses them and even maintains multiple document copies if necessary. While an Internet-style text retrieval system may leave a user looking at an error message because the document has been moved — a common occurrence for surfing users — document management systems always know where documents are.

"A document may be revised 20 to 30 times, so a company needs a system that tracks usage and ensures users work with up-to-date information," says David Weinberger, vice president of marketing at Open Text in Waterloo, Ont.

See Document, *page 29*

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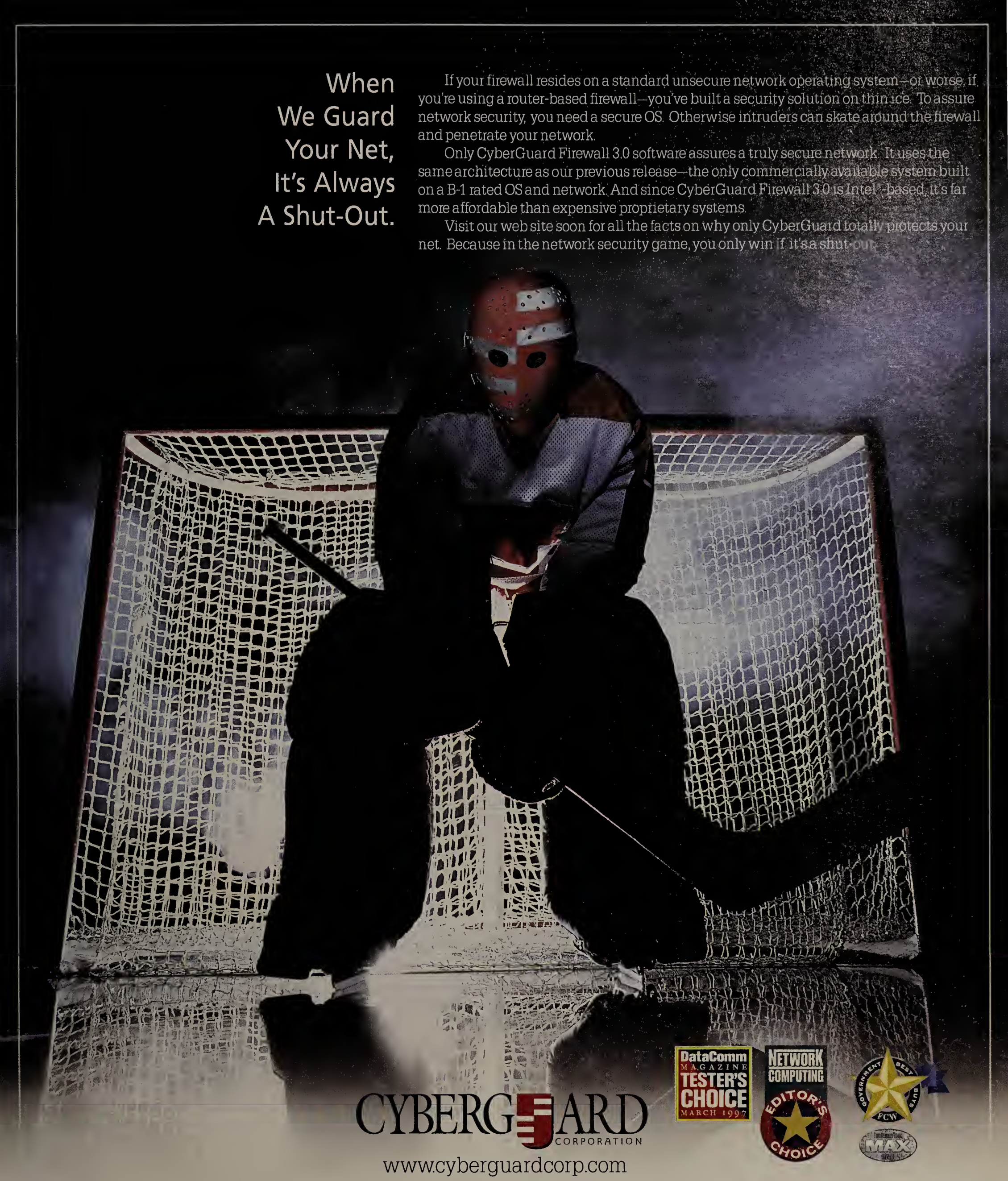

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Circle Reader Service **#10**

All work and no play may limit intranet usage

BY PAUL KORZENIOWSKI

One employee needs a roommate. A second wants to know when and where the company softball game will take place. Another wants to make a chess move during a break from an engineering project.

In each case, the workers fire up their Web browsers and cruise the intranet.

While many companies are all business, some realize intranets only enhance communications if employees log on. They encourage participation by doing everything from sponsoring special-interest pages to allowing employees to put up home pages.

After using an intranet to respond to a job listing, for example, employees often find they can use the network to market their skills.

"For exposure, employees are constructing Web pages with resumes and personal information — some even feature family pictures," says Jay Krohnengold, manager of corporate communications at Pacific Telesis Group. The San Francisco-based company now has 12,000 of its 48,000 users on its intranet.

Classified ads are another quick, personal touch that drives intranet usage. Westinghouse Electric Corp. in Pittsburgh has approximately 20,000 intranet users. Terri Marts, a managing director at Source W, a Westinghouse business, says Westinghouse has a site on which employees can list items such as apartment rentals. Such listings were available in corporate newsletters, so the company saw no reason not to allow them on the intranet.

The Mayo Clinic in Minneapolis also publishes this type of information on its intranet, which supports 20,000 users. "We view the intranet as just one of many mechanisms employees can use to share information," says Brian Kaihoi, a planning analyst at the clinic. The organization sponsors sports teams, including a softball league, and employees can dial in to a Web page and check the standings or time of the next game.

Coopers & Lybrand LLP in New York wants all of its employees online. "We are in the information business, so the more we can do to encourage employees to improve internal communications, the stronger our business becomes," says Katie Gove, a senior associate at the consulting firm.

The company's intranet connects 16,500 users in the U.S. and is gradually expanding to support the firm's 45,000 employees worldwide. One Web page deals with business travel issues. It gives employees a place to list comfortable hotels, favorite restaurants in various cities and other tips.

Westinghouse has a health and wellness page that outlines exercise routines, different types of diets and ways to relieve stress. Employees may not have time to visit a doctor, but they can take a few moments to click on a series of icons and gain some healthy advice, Marts says.

The Coopers & Lybrand and Westinghouse examples offer "soft" business benefits. The travel page aids roving employees who make up a large portion of Coopers & Lybrand's workforce. The health and wellness page may help employees stay fit and ultimately reduce Westinghouse's medical expenses.

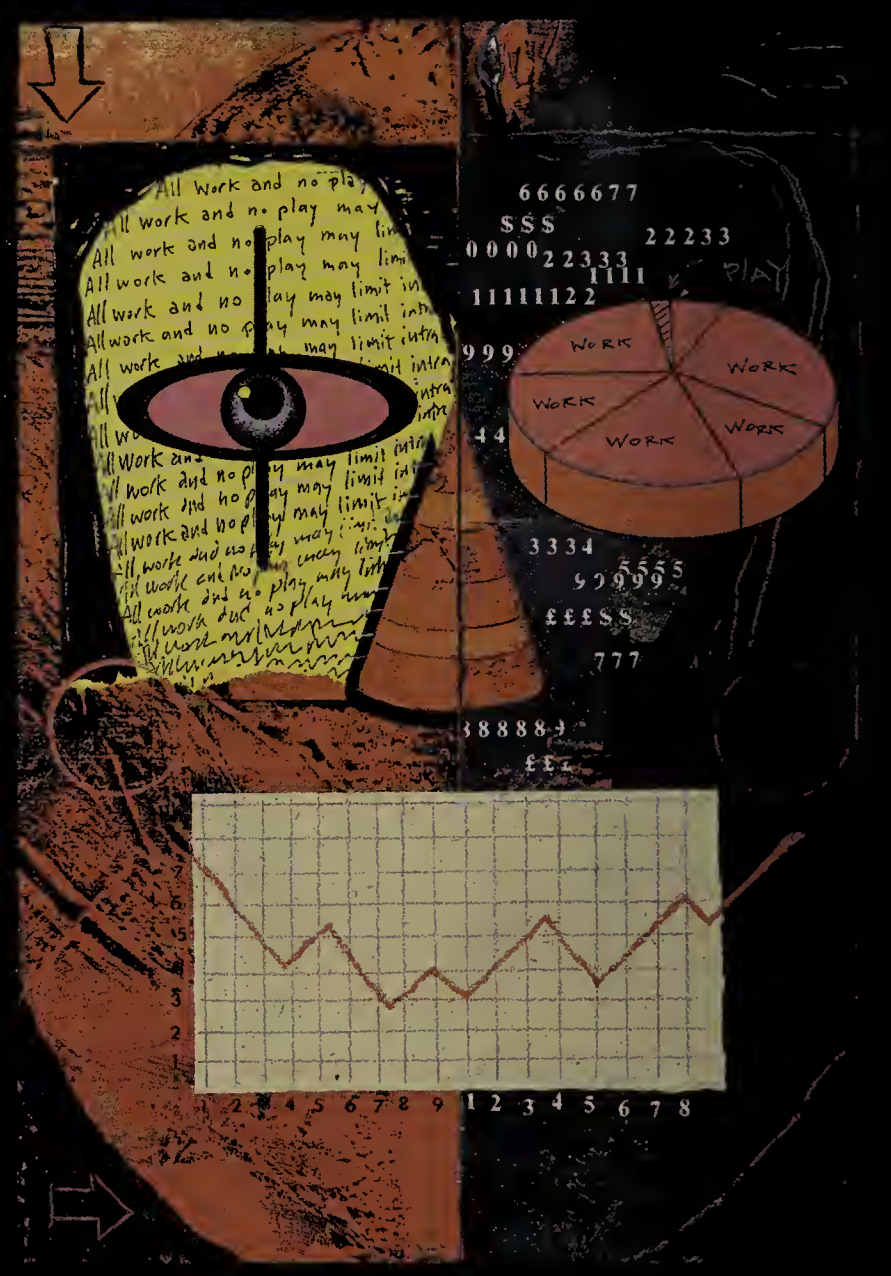
Most companies require at least a soft benefit and impose some limits on what employees can post on the intranet.

At Pacific Bell, employees publish one page geared to sports issues and another for community activities. The company does not want to encourage wide-scale use of nonbusiness systems, so these pages are not linked to the firm's main Web servers. Workers must rely on word of mouth to find them.

Whether corporations will be able to maintain strict control going forward is questionable because the number of intranet pages is growing exponentially. Pacific Bell, for example, has approximately 30,000 pages on its intranet. IT groups will find it increasingly difficult to monitor content.

Chicago-based Argonne National Laboratories, which has 4,000 users focusing on engineering and scientific issues, already has decided to give up the fight. The lab lets departments decide what information should be placed on their Web servers. Sharon Savage, associate director of the information and publishing division at Argonne, expects pages devoted to chess and ham radio to spring up.

"Top management doesn't really care what is on department Web pages as long as the department gets its work done," Savage explains.



ANTHONY FREDA

Document, *continued from page 26*

In essence, you end up with redundant search capabilities — one for the freestyle portion of your Web and one built into the managed realm.

Says Nathaniel Palmer, a senior consultant at the Delphi Consulting Group in Boston: "If you have a document management system that has access to all the information in your intranet, then it becomes redundant. But there are few cases where that is true. Companies only keep certain documents within the controlled environment."

How do you decide what goes where? "It can be as simple as all mission-critical stuff goes into the document management system and everything else goes into the intranet," Palmer says. "Or there may be specific regulatory reasons why you would have to manage one set and not another."

He points out that if users aren't forced to check documents into a management system, they won't. That increases the need for search tools that can sweep over the entire intranet.

Ultimate shift

The 7,000 employees who use Unix workstations to design aircraft engines at Allied Signal rely on some general-purpose intranet search engines as well as the Verity Topic search engine provided with Documentum's document management system, Bush says.

"One of the things we're looking into is whether those things will ever meld together well," Bush says. The company faces many hurdles, including this one: "We don't want a robot trying to re-index everything in the document management engine because we're going to have so much in there."

A solution may be adopting Verity for the intranet and keeping Documentum for the storage of mission-critical information. Then it could create a search screen that gives the user the option of scanning one or both environments (providing the user has the appropriate security logon).

Bush maintains, however, that the shift is toward the managed environment in the long term. "We will gradually be working more and more from the document management side and less from the freestyle chaos directory structures that result in a large Web site," he says. "We're Web proponents. The problem is the manageability of the information. I see more and more of our sites rolling into the managed environment."

He says he couldn't say that a year ago because there weren't any strong, well-architected document systems that could handle full Web site management. "Today there are many tools available that can be used to manage an entire site, with all the hypertext links being kept intact, with [Common Gateway Interface] scripting, the whole nine yards," Bush says.

Allied Signal picked Documentum's Enterprise Document Management System because of its integrated security feature and flexible object-oriented design. It installed the system at the end of 1994 and now has six document databases with 300,000 documents.

While the world ultimately may follow Bush's lead and move more content into document management systems, new developments may forestall a wholesale shift. Technologies such as Dynamic HTML are set to transform intranets from passive read-only into interactive read/write environments. That won't solve the problem of tracking changes, but it could greatly extend the functionality of intranet-based document repositories.

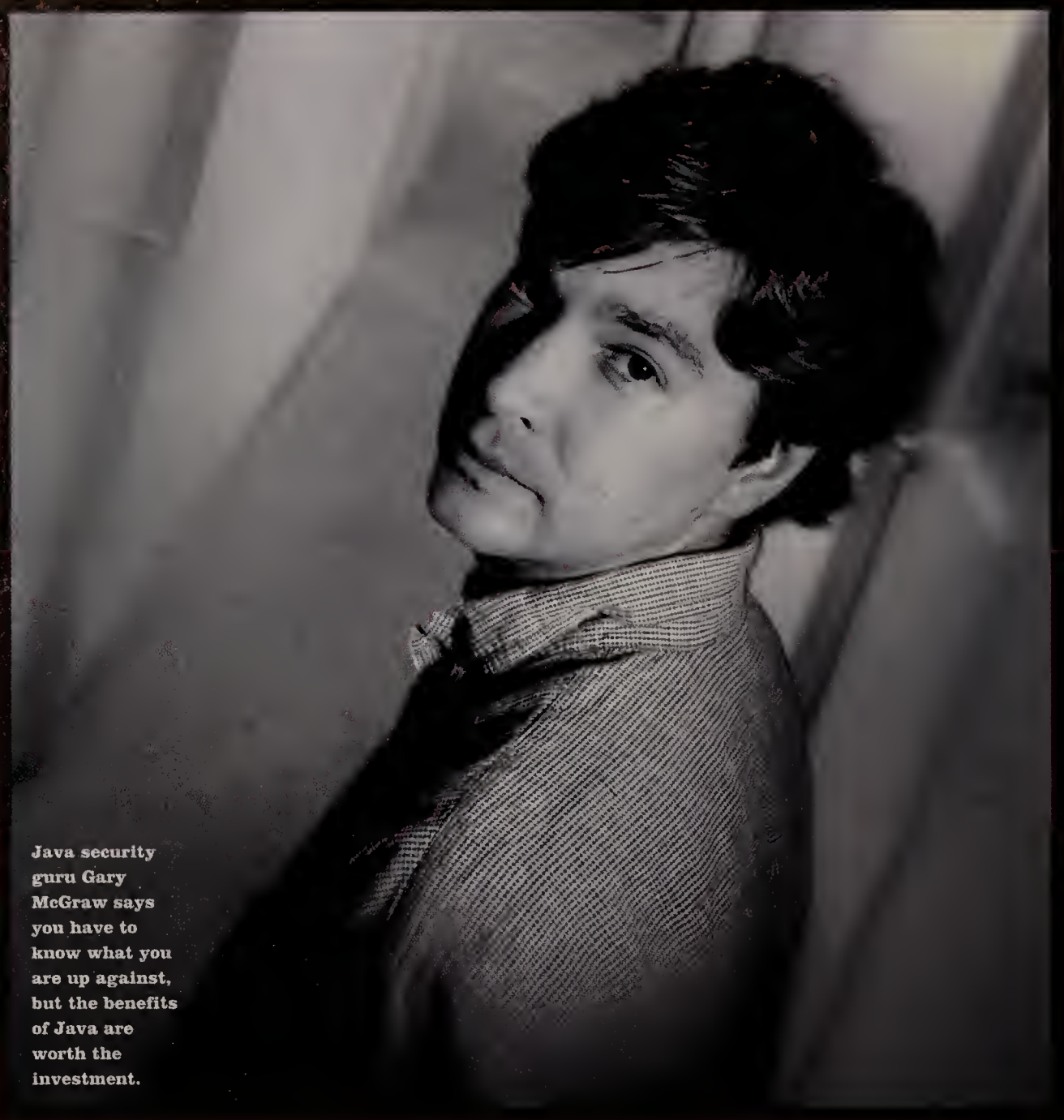
It looks like we're going to be maintaining managed and nonmanaged document domains for a while, so it would be nice to be able to search the whole shebang using one tool. Given it's easier to master text retrieval than document management, it seems likely that capability will first emerge from the document management players.

...use Java to solve the problem. You write one applet that can be downloaded to browsers and is then used to ...a database but don't want to write code for every environment you have to ...machines to manipulate ...create the database query. But the applet has to be able to read files, so you've really got to extend the current Java security model."

INTRAVIEW

Q&A

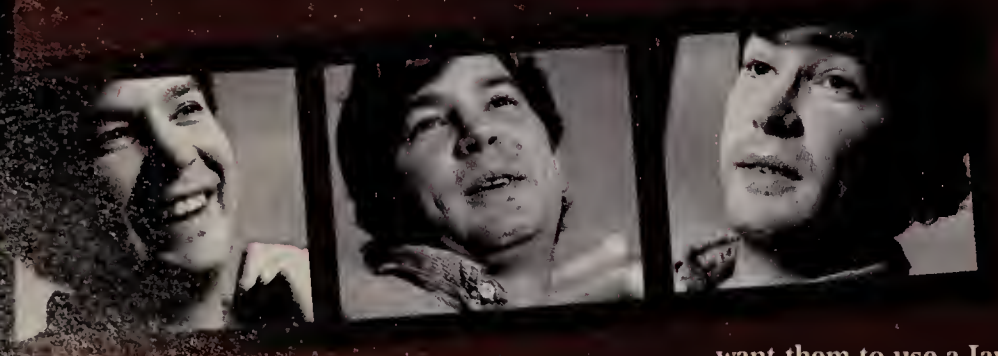
Java: Can it be trusted?



KATHERINE LAMBERT

Java security guru Gary McGraw says you have to know what you are up against, but the benefits of Java are worth the investment.

Using Java is a great way to perk up your intranet, but have you thought through all the security implications? Gary McGraw, coauthor of Java Security: Hostile Applets, Holes and Antidotes, *has. In a recent interview with* IntraNet, *he suggests*



treading lightly around Java. McGraw is a research scientist at Reliable Software Technologies, which helps developers bulletproof mission-critical applications, like those used at nuclear power plants. He wrote the book with Ed Felten, an assistant professor at Princeton University.

What threat does Java represent to intranet operators?

The main threat may not be Java in particular but executable content, which is a bigger rubric under which Java fits. It includes ActiveX controls and even Word macros and scripts that you can attach to e-mail.

The problem is this: If the Web browser has executable contents enabled — that is, the Web browser allows you to use Java and ActiveX and all that cool stuff — how do you stop your users from downloading dangerous content? After all, you might want them to use a Java applet that you wrote for your intranet, but want to prohibit use of applets from the outside.

So you have to figure out where your data is coming from. Some people try to do things like stop Java or ActiveX at the firewall. But there's some evidence that that's impossible.

Why is that?

Because the usual approach is to scan all the incoming traffic on HTTP Port 80 looking for stuff like applet tags. That's an insufficient way to stop Java applets because there are other ways you can get byte code [the result of compiling Java source code] onto a machine. An example would be having an applet .class file masquerade as an image. So you say it's an image and it gets loaded into the cache and the viewer breaks. But that doesn't matter, it's still there in the cache. And if later you can invoke it, then the trouble will occur.

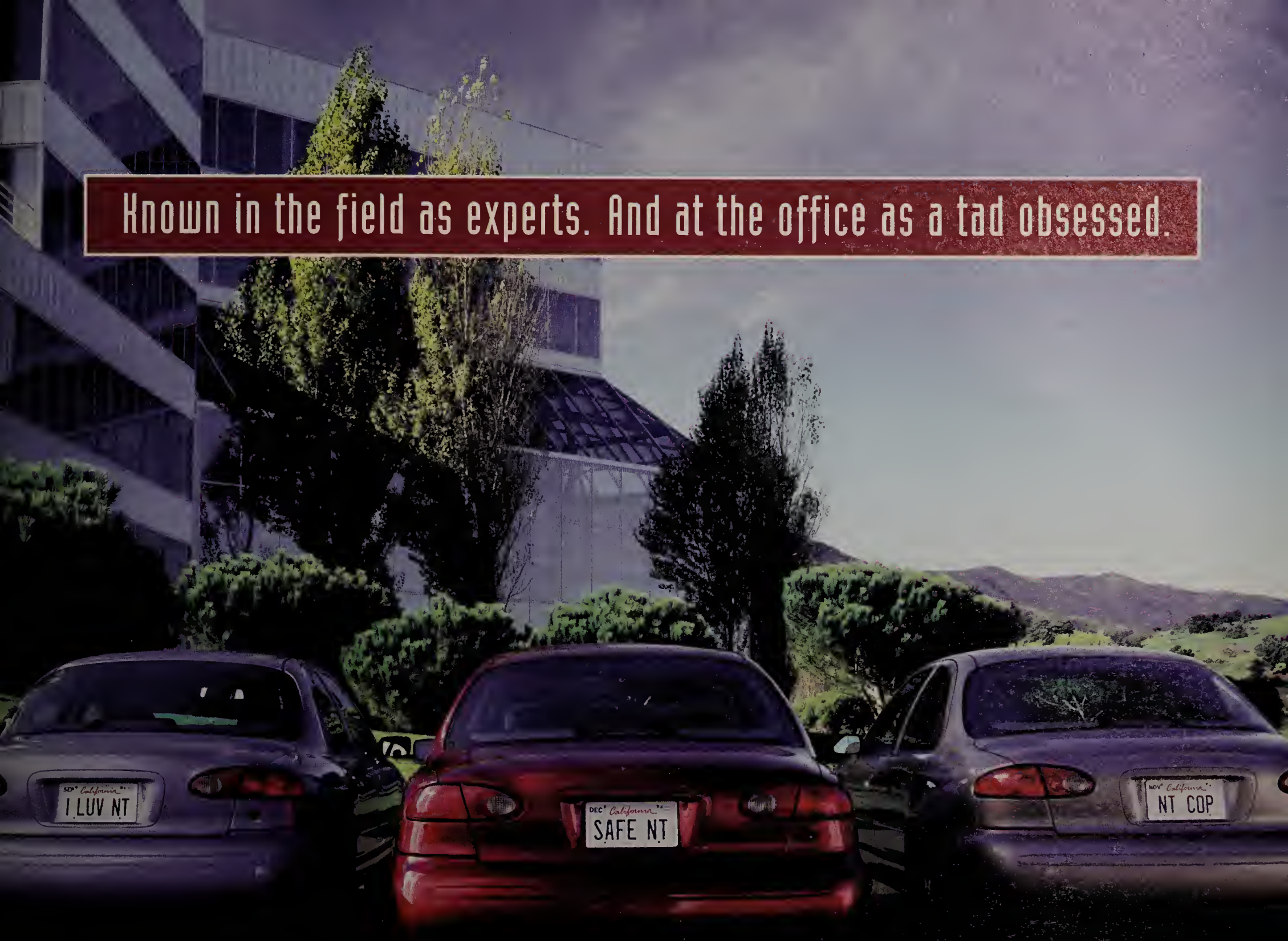
You could stop Java applets by scanning every single piece of binary traffic going by your firewall, looking for particular patterns.

But nobody's doing that because traffic is typically too heavy to filter every port for these patterns.

Java byte code is required to carry this little thing called "the magic number" that spells out CAFE BABE in hexidecimal. Those two bytes are required at the beginning of all Java byte code. So you could possibly look for the magic number on every port, but that would be like trying to find a bead flying by in a fire hose of water.

So you can't safeguard your intranet against Java attacks using firewalls?

That's right. There is a good technical paper about this called "Blocking Java Applets at the Firewall" by David Martin of Boston University and S. Rajagopalan and Aviel Rubin from Bellcore [you can find it at www.rstcorp.com/javasecurity/links.html]. The paper basically takes aim at vendors that believe you can stop Java applets by scanning traffic on Port 80.



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which Netscape Communicator and Microsoft Internet Explorer will support — is going to have extended

operational capabilities that allow applets to do more than they're allowed to do now. That's going to complicate the security situation."

employees from deleting files or planting bogus data

through the current Java security framework prevents disgruntled

INTRAVIEW

Q&A

Before we talk about what you can do to safeguard yourself, can you explain why Java attacks are so nefarious?

The beauty of Java is it is cross-platform — Java byte code can run on any platform that supports the Java Virtual Machine — but that is also what makes Java kind of scary. If there is such a thing as a Java virus — and there has never been one, but it's a programming language so it's a possibility — or a Java attack applet, that attack applet will work on any platform. So it won't be the usual attack that, say, only works on Solaris or HP-UX. It will attack every single platform to which Java has been ported.

Also, it used to be that in order to become a target you had to make somebody notice you existed or you had to have a valuable asset. Now in order to become a target all you have to do is surf over to some Web site that has some attack Java code. And because Java works by downloading executable code across the 'Net, somebody else's code will end up running on your machine.

The people who designed Java were well-aware of the security implications of this and tried to make it so you could run Java code safely on your browser. That is, once the code gets into your computer and starts running, it's not allowed to do dangerous things like read and write files and it's not allowed to make network connections, except back to where it came from.

So the Java security model stops applets from doing awful things to you and, for the most part, it works. The problem is, it also works for intranet stuff. So, let's say I want to write an intranet Java applet that would let Macintosh, Wintel and Unix clients access a database. I couldn't because Java is not allowed to access files in applet form, period.

So everybody says: You can't do anything in Java because every time I write this application I get all these security exceptions. And Sun says, 'We're going to change the security model to allow something called signed code. We'll have an applet with a digital signature attached that's allowed to have more privilege than usual. If the applet is signed with a digital signature by somebody you know, you can allow it to read and write files.'

Digital signatures will allow you to let Java applets out of what they call the Sandbox. People who are writing Java applets for intranets are really interested in that because they want to use applets to do more than display animations. But the problem is that the framework for digital signatures needs to be perfect or you'll leave yourself vulnerable.

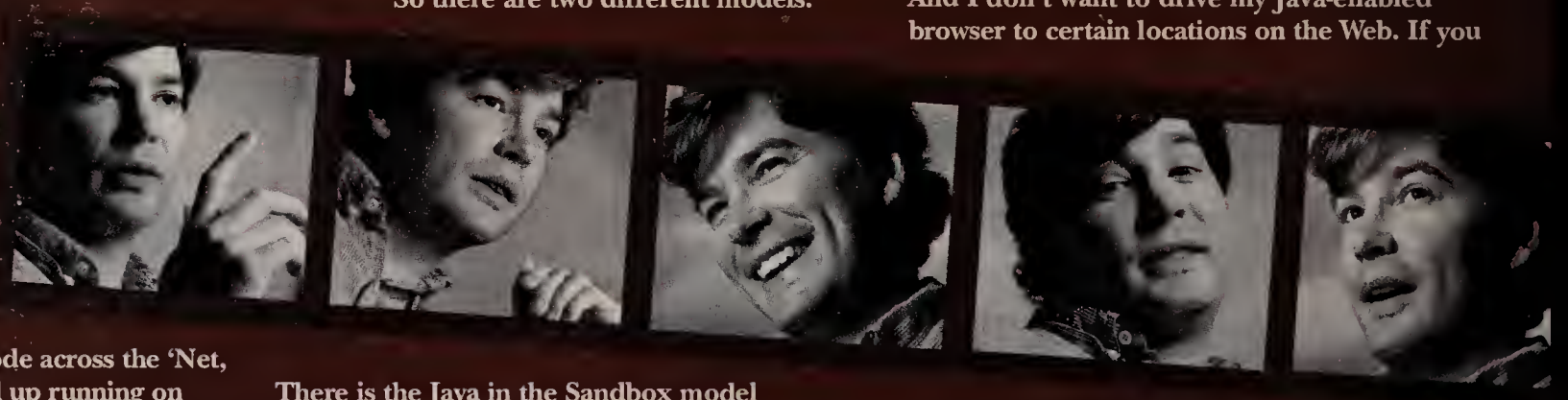
Java used to be pretty simple from a security standpoint because you didn't trust any applets at all, even if you wrote them yourself. But that's changing with this signed code.

You opened saying Java was just one threat, and that the bigger threat is executable content in general. How about other threats?

Well, ActiveX is Microsoft's answer to executable content, and it doesn't have a security model. So ActiveX code can do anything at all if you choose to run it. It can delete every file on your machine. But ActiveX has this code-signing mechanism. When you get an ActiveX control, it'll say in your browser, 'This ActiveX control was signed by so-and-so, do you want to run it?' And the user gets to decide.

Well, most users don't give a whatever about computer security. And so they may say, 'OK.' And then they've done something very dangerous. There aren't many security administrators who think it's a good idea to put the security policy into the hands of users.

So there are two different models.



There is the Java in the Sandbox model and the ActiveX, 'well if it's signed I trust it fully' model. And the plan is to add the signature capability to Java. But the developers want to let Java applets out of the Sandbox gradually.

The way it's implemented now in JDK 1.11 [Java Development Kit], they let the applet completely out of the Sandbox. That is, the security model doesn't apply. If it's signed code and you've given it permission to run, it can do anything at all. But in the future, they want to add access control, and that's something that's going to show up in JDK 1.2.

The access control idea is cool because you can say, 'If this applet is signed by my friend Bob, I'll allow it to read this particular file, and that's all.' That's good. But that's bad because some poor sod has to set up the security policy exactly right. And it's going to be complicated. If you screw up, you're going to be exposed.

What happens long term?

In the future, there's going to be a mix of both of these things, I believe. There'll be code-signing authentication and some sort of security model, like a Sandbox. Now the question is: Is it going to be easier for Java to add code signing and access control or easier for the ActiveX people to invent the Sandbox? I think the answer is it will be much easier to extend Java, the Java Sandbox, than it will be to reverse engineer Sandbox into ActiveX.

Can you expand on the different classes of security threats?

The most serious kind of threat comes from things we call attack applets that modify your system. These applets basically leave your machine open for hackers to do anything they want.

Now, Java-based system modification attacks have never been seen in the wild. But they do exist in the lab. All of the attack applets that the Princeton guys have written about are all system modification attacks of various sorts. The other three major threats are carried out by things we call malicious applets, [applets that either invade your privacy, restrict access to your computer or simply annoy you].

Why haven't we seen any system modification attacks yet?

I think it's just been serendipity. The guys at Princeton have been finding the holes before the hackers, so it's lucky they're good guys.

How can we safely use Java?

In the book we offer six guidelines for using Java more safely. Things like, 'Know what Web sites you're visiting.' I use this analogy. I wouldn't drive into certain neighborhoods in Washington, D.C., because they're dangerous. And I don't want to drive my Java-enabled browser to certain locations on the Web. If you go to Joe's Evil Hacker Underground, click here and die.edu and you have Java running, then you're an idiot.

And you need to 'Know your Java environment' because the Java security model is made up of three parts and different parts are implemented by different vendors. So you need to make decisions based on what company you think is going to do a better job with security.

And another one is 'Keep a lookout for security alerts.' A good way to do that is go to the CERT site, www.cert.org, and sign up for the CERT alerts. But the problem with CERT is it's often two or three months behind the hackers because it waits for a patch to be issued before it warns people about security holes.

If you're worried about security and you're really a good target, you need to be more attuned to what's going on. We provide a free service for people who are concerned about Java security in particular. And we have a mailing list that people can sign up for at www.rstcorp.com/java-security.html. That's actually a companion Web site for our book, but down at the bottom there's a little registration form you can sign up for.

Another one of our recommendations about using Java safely, and this one is really the take-home message of the book, is 'Assess your risks.' That is, learn about this stuff, learn what your risks are, learn what you have to lose and manage appropriately.

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Define or be defined

"In the animal kingdom, the rule is, eat or be eaten; in the human kingdom, define or be defined."

— Thomas Szasz, U.S. psychiatrist, The Second Sin

few days ago, I was explaining how powerful intranets are to a friend who is not in the computer business. After I'd waxed eloquently (at least I thought so) for a half hour, I paused to draw breath. It was then he pounced with: "Yeah, that's all very well, but what exactly is an intranet? In a few words."

Intranet is one of those things you really don't want to be asked to summarize in a few words. It's not that intranets can't be defined. It's just that a simple answer is fiendishly difficult. It's like trying to define art — that's hard to do, but you know art when you see it.

But in IT circles, the ability to define an intranet is becoming increasingly important. This is because IT managers need to know what they're trying to sell the company, as well as build, manage and control.

When I challenged our Intranet Business Group mailing list (go to www.gibbs. com/ibg to join) to define an intranet, I got a significant spread of opinion.

One of the first out of the gate described an intranet as an infrastructure based on Internet technologies. The member described an intranet application as one that supports the *internal* information and communications structure of an organization and depends on the intranet infrastructure.

I have a problem with these definitions. I don't like the restricted scope of having everything depend on Internet technologies. A strict interpretation of the definition of an intranet application, for example, doesn't apply to LAN electronic mail packages. Yet I believe e-mail in any form is at least an intranet-related service. And what if you establish a gateway between LAN e-mail and an intranet?

JOEL NAKAMURA

One list member shared a more generalized definition for an intranet — "a secure shared network of platform-independent services." I like this better, particularly because it doesn't place arbitrary restrictions on applications and, more importantly, because it mentions security, platform independence and sharing (even though sharing isn't the focus of an intranet but rather of the network infrastructure itself). This definition, however, doesn't really go far enough.

Another member also suggested "an intranet is the optimization of a company's existing networking system into a new system incorporating Internet technologies that allow the flow of information to extend further and faster with visuals, text, audio, etc." I like this definition, as it moves the discussion to the somewhat higher levels of information flow and richness of content.

Another member also focused on content: "An intranet is an employee/internal access-only Web site. This includes the new 'extranet' service (access to an intranet from an off-enterprise site via the Internet). The content of this site should include business applications (for general access), HR and departmental forms, internal forums and collaboration, news and messages from top executives, business reports (such as stock status, news on mergers and events, rumor control, industry and government reports), points of interest (such as industry-related comics, quote of the day, local weather/news/travel information), maps of the area (for national commuting) and upcoming training and events."

One member tackled the intranet's breadth. "In general, an intranet can include or not include access to the Internet. It can include or not include remote access or WAN customer access. An intranet is defined more by what it isn't than what it is. It isn't the no-holds-barred, free-range, anyone-with-a-modem-and-$19.95-can-get-on Internet. Other than that ... it's how your company chooses to define it."

The definitions vary, but some common themes run through: use of Internet technologies; rich, multimedia content; accessibility by a broad audience; security; and sharing and collaboration.

After considering what others offered and talking to other IT people, I came up with my own definition. An intranet must be defined in layers. An intranet's core layer — Layer 0 — is a hyperlinked, multimedia, secured, shared data space supporting information publishing and retrieval services. Layer 1 consists of the applications that express the core services, such as Web servers and browsers, Virtual Reality Modeling Language browsers, Office97 applications, authoring tools, etc. Layer 2 is for those applications that aren't directly compatible with the core services but offer considerable generalized information publishing and retrieval services. For example, Lotus Development Corp.'s cc:Mail belongs in this layer because it doesn't integrate with the broader context of intranet services. However, a gateway admits it into Layer 1. On the other hand, Qualcomm, Inc.'s Eudora Pro Version 3.0, because it recognizes URLs in documents and creates clickable hyperlinks, resides directly in Layer 1.

Finally, the network infrastructure proper — Ethernet, token ring, routers, etc. — comprises the outer layer. This is all the stuff on which your intranet sits but that really only has a supporting role.

In other words, intranets are defined by architectural issues as well as functionality. To quote comedian Dennis Miller: "That's just my opinion; I could be wrong."

If you think my definition is wrong, be sure to let me know. I can be reached via the Internet at imcolumn@gibbs.com or by phone at (800) 622-1108, Ext. 504.

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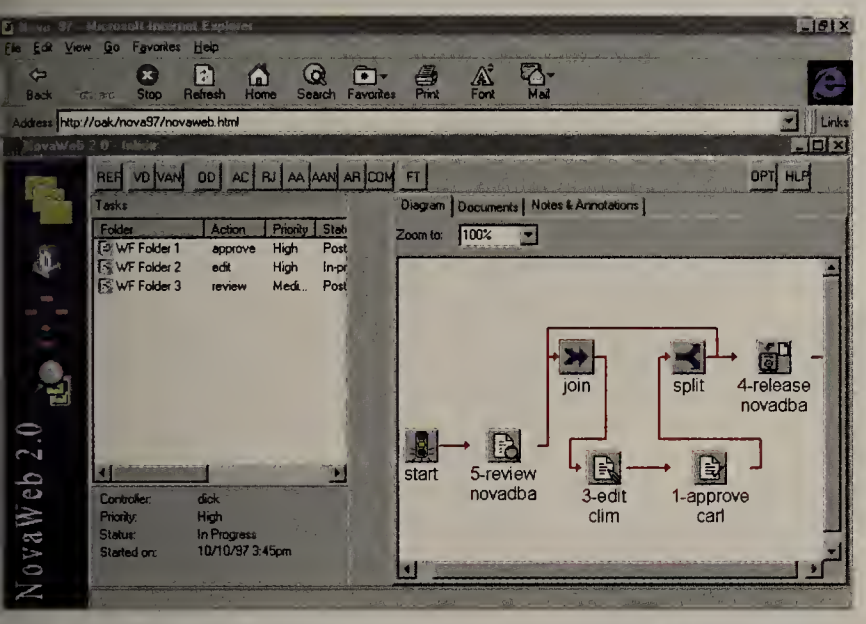
Document management vendors turn to Java

By Paul McNamara

Bringing document management capabilities to the browser-using masses will be the thrust of announcements this week from a pair of vendors.

NovaSoft Systems, Inc., of Burlington, Mass., will introduce NovaWeb, server-based software that will give end users with Java-enabled Web browsers access to NovaSoft's flagship NovaManage server. Separately, NetRight Technologies, Inc., of Sunnyvale, Calif., will unveil iManage Internet, which provides Web browser users with document access via server-based Java applets.



Pictured is *the NovaWeb workflow inbox where users of NovaSoft's new Web-based viewing products go via their browsers to participate in an automated process.*

Industry analysts and customers say the embrace of Java by these and other vendors will open new possibilities for enterprisewide document management in large and small companies. While proprietary client/ server document management products offer more sophisticated functions than Web-based alternatives, the new offerings require no client-side maintenance and work across heterogeneous environments.

NovaWeb, which runs on Windows NT 4.0, Solaris and HP-UX 10.01 servers, includes two separately priced Java applets that can be downloaded by browser users based on their business roles. The NovaWeb/ View applet allows users to tap into NovaManage servers to see folders and documents. The NovaWeb/ Approve applet lets contributors review and approve documents created by others.

"[NovaWeb] is going to greatly reduce the time we need to deploy a large group of users, and it's also going to be excellent for providing accessibility across all the different platforms we support," said Kitty Cole, a systems administrator at PictureTel Corp. of Andover, Mass.

NovaWeb/Approve costs $750 to $925 per user and NovaWeb/View costs $50 to $250 per user. The NovaWeb server software costs $20,000 for 1,000 users.

NetRight's new iManage Internet offering expands the company's existing document management line beyond the iManage Network products for Windows NT and NetWare environments. The product gives Netscape Navigator 3.0 and Microsoft Internet Explorer 3.0 browser users access to documents stored on file servers and in database management systems.

iManage Internet, available next month, starts at $5,000 for 25 users.

✆ NovaSoft: (617) 221-0300; NetRight: (408) 523-4005

Progress unveils speedier WebSpeed kit

By John Cox
Bedford, Mass.

The latest version of Progress Software Corp.'s WebSpeed development tool set includes several new features for improving the performance of mainstream Internet applications.

Version 2.0 enables developers to build applications that can balance traffic loads across servers. The balance speeds up application processing and improves response times for end users trying to access information. The updated software also is easier for developers to use, which means they can build applications faster, according to the company.

Making progress on WebSpeed

New features include:

- Automatic load balancing by WebSpeed Transaction Server
- Browser access to all WebSpeed tools and features
- Integration with Security Dynamics' WebID security card and software
- An MQSeries agent for WebSpeed application access to mainframe applications

The original version of WebSpeed, released in September, was designed for building transaction-based Internet applications and is focused mainly on building server programs. It consists of Workshop tools such as an editing screen and reusable onscreen components; SpeedScript, a language for building server-based application logic; and a Transaction Server. Developers now can access all WebSpeed tools and features via standard Web browsers; previously developers had to work in Windows.

Version 2.0 also includes new wizards to guide developers through application building and new templates that can be combined to build applications quicker.

Available July 15, the Workshop component starts at $995 per developer, while a five-client license for the Transaction Server costs $2,500.

✆ Progress: (617) 280-4000

Browser users can access Windows docs

Net-It software launches document sharing software for corporate intranets.

By Chris Nerney
San Francisco

A start-up that launched itself last fall with a client-side Web publishing application today will unveil software for turning intranets into document-sharing platforms.

Net-It Software Corp.'s new Net-It Central offering enables end users with Web browsers to access any Windows document, including spreadsheets, graphic presentations and business plans.

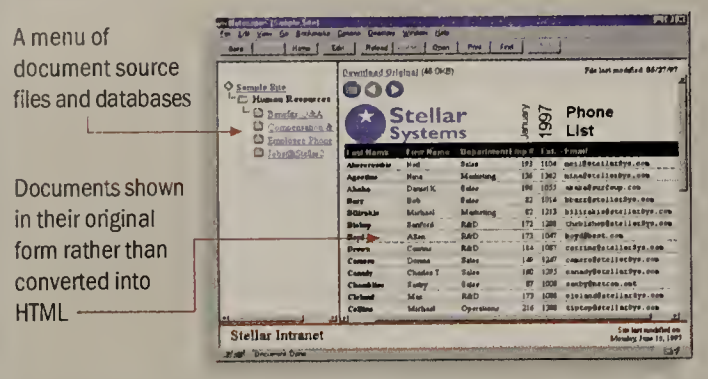
"There's a lot of corporate know-how stored in documents and reports," said Net-It President and CEO Dennis Ryan.

"The intranet is a great infrastructure to enable better communications, but for the most part, desktop documents are out of the fold. We're trying to bring your desktop documents into the fold," Ryan said.

Net-It Central runs on a Web server or a Windows NT or 95 workstation that has Network File System or File Transfer Protocol access to the Web server.

INTRANET DOCUMENT SHARING WITHOUT PLUG-INS

Net-It Central, a server-based product from Net-It Software, allows users to view any Windows through a standard browser. Here's what users see:



Net-It Central collects Windows-based documents from end users and makes the documents available to other end users whose desktop machines run Web browsers.

Browser users can view documents in their native format, avoiding the need for HTML conversion.

That is because Net-It Central features the same Java-based jDoc technology found in the company's Net-It Now desktop publishing software.

The jDoc engine in Net-It Central also adds support for the printing of any document from Windows 95 and NT Web browsers.

The server-based document management product "fills a need that nobody else is filling," said Nathaniel Palmer, a senior consultant at Delphi Internet Services of Cambridge, Mass. "The closest thing to it would be Microsoft [Corp.'s] ability to provide a plug-in viewer for PowerPoint."

Net-It Central is available now and costs between $1,995 for a starter edition and $6,995 for a version that includes a custom API.

Ryan also announced that Net-It has closed a $3.5 million venture capital deal with Benchmark Capital of Menlo Park, Calif., and Brinson Partners of Chicago.

This is the second round of financing for Net-It, which was founded in June 1995. The company received $1.75 million in funding from Benchmark in May 1996.

✆ Net-It: (415) 551-0600

ISPs to bundle Adobe tools

By Denise Pappalardo
San Jose, Calif.

Adobe Systems, Inc. last week announced it has found a new way to get its Web authoring software into the hands of customers: via Internet service providers.

Adobe has signed separate agreements with Best Internet Communications, Inc., EarthLink Network, Inc. and Netcom On-Line Communication Services, Inc., under which the ISPs will package Adobe's PageMill 2.0 software as part of their Web hosting services.

Web hosting involves an ISP housing a customer's Web site and managing the customer's server.

WEB PAGE DEVELOPMENT MADE EASY

Adobe PageMill 2.0 software is designed to let novice users develop business-quality Web pages. The software lets users:

- Import text from most word processing, spreadsheet and database formats.
- Find and replace text, links, graphics, sound and video using dialog boxes.
- Create and change frames while previewing.
- Adjust source code directly using PageMill's HTML Editor.

PageMill is a Web authoring tool kit that lets even nonexperts in HTML create and preview pages, said Kevin Wandryk, director of product management at Adobe. Unlike rival products such as Microsoft Corp.'s PageMaker, PageMill eliminates the need for page developers to spend time previewing frame-based content within a browser, he said.

The software package also includes PhotoShop, which lets page developers add scanned photos to their Web sites. PhotoShop also includes tools that let page developers jazz up Web sites by adjusting color and applying special effects filters.

With PageMill, developers can add multimedia elements to their pages using Netscape Communications Corp. plug-ins, Portable Document Format and QuickTime Shockwave content, Wandryk said.

Tools such as PageMill are becoming increasingly popular among companies looking to give more employees Web development opportunities, according to market research firm International Data Corp. (IDC) in Framingham, Mass. IDC projects that more than 1.3 million Web authoring software licenses will be sold by year-end; that number will increase to 1.9 million next year.

Enhanced hosting

The ISPs will take advantage of the growing popularity of Web authoring tools by centering new services around PageMill or enhancing existing ones.

Netcom introduced a new Web hosting service called Business Site that provides customers with PageMill, said Cristi Jakubik, product manager of hosting services at the San Jose, Calif.-based ISP. This managed Web server offering features 50M bytes of server space, 1G byte of data throughput, 10 e-mail addresses and Common Gateway Interface support. The service will be available in mid-July for $150 per month, Jakubik said.

EarthLink, of Pasadena, Calif., will offer PageMill to customers of its Website, Inc. managed Web hosting service.

Best Internet, of Mountain View, Calif., is offering the software at no additional charge to Web hosting customers that sign up for quarterly billing.

✆ Best Internet: (800) 764-2378; EarthLink: (800) 395-8425; Netcom: (800) 638-2661

Neuron Data plays by the rules with Java

By John Cox
Mountain View, Calif.

Neuron Data, Inc. will soon ship a version of its rules-based development tool set for building Java applications.

The company's Elements for Java offering is designed to make building Java applications easy and changing them even easier.

Developers can use the product to build applications — including those that are server-based — by describing business processes as a set of rules the applications must follow. Updates can be made by simply changing the rules instead of extensively rewriting the programs.

Elements for Java has two components. Presenter/J is a high-end tool kit for building graphical user interface applications in Java. Advisor/J is the rules engine, written in Java. The product is certified as "100% pure Java" and also supports JavaSoft, Inc.'s JavaBeans component model.

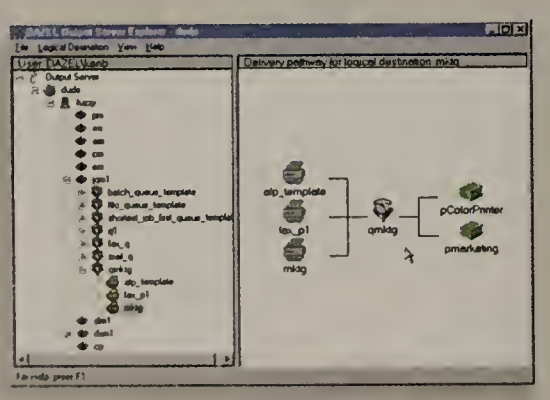
Neuron also released Version 2.1 of Elements for C and C++. They include new components for building publish/ subscribe messaging middleware into applications and for converting C or C++ code to Java. Later this year, Neuron will release components for connecting Elements applications with Intersolv, Inc.'s PVCS Version Manager and with Mercury Interactive, Inc.'s WinRunn and Xrunner software testing tools.

Elements for Java has an introductory price of $495 per developer for Presenter/J and $6,500 per developer for Advisor/J. The product will be available July 1. The 2.1 releases of Elements for C and Elements for C++ are available now; they are priced at $15,995 per developer.

✆ Neuron: (415) 528-3450

QUICK TAKE: OUTPUT SERVER 3.0

Dazel jumps aboard NT bandwagon



Dazel Corp. last week released a new version of its flagship Output Server software that adds support for Windows NT, allowing its use in mixed NT/Unix environments.

Version 3.0, like earlier editions, manages the output of information from client/server applications across networks to printers, fax machines, e-mail systems and more. New to the software is a simplified management system and a feature that allows a document to be sent to several different output devices simultaneously.

In addition to NT, Output Server supports SunOS, Solaris, HP-UX and AIX. Output Server 3.0 costs $60,000 for 150 users and is scheduled to ship next month.

Dazel: (512) 476-3484

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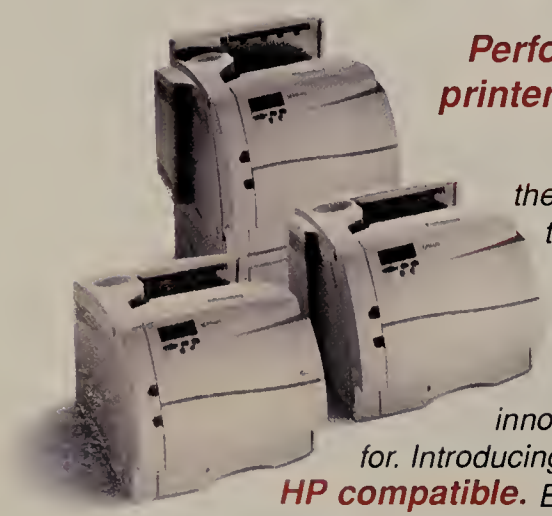

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Netscape CEO warns that Fed encryption plan will flop

By Margret Johnston
Maastricht, Netherlands

Government policies aimed at establishing a system to control the encryption of electronic messaging ultimately will fail, according to Jim Barksdale, Netscape Communications Corp. CEO and President.

"Governments cannot build such a system," Barksdale said last week in a keynote speech at the European Electronic Messaging Association's conference here. "Governments have enough trouble just building a tax collecting system. This would put the lights out."

Barksdale said the key escrow proposal — which would require users to deposit their encryption keys with a third party — is not the solution to law enforcement agency concerns that criminal activity such as money laundering could go on unchecked over the Internet.

Governments could gain more by relaxing their policies than by tightening them, Barksdale said. Legitimate companies are going to safeguard encryption keys just as they safeguard keys to company filing cabinets that contain confidential information, he said.

And law enforcement officials would still have the opportunity to catch criminals because "sooner or later all bad money crosses good banks," Barksdale said.

Netscape will continue lobbying against the current U.S. policy. The policy allows vendors to export encryption technology with keys as large as 56 bits, but only if the exporter agrees to leave a key to decrypt the software with a certified key recovery agency. However, there is an exception for encryption software used by the banking and financial community.

This policy has allowed European software vendors to step in and fill the market void, Barksdale said.

"We are pushing hard to convince a lot of people [that the policy needs to change]," Barksdale said. "I think we will be successful . . . because the impracticality will become so evident it will cause people to reevaluate it."

On other issues, Barksdale said Netscape is not concerned about losing more Internet browser market share if Microsoft Corp. builds Internet Explorer into the Windows operating system.

"Netscape still has 70% of the market after three years of an onslaught from Microsoft," Barksdale told reporters at a briefing after his keynote speech. Building Explorer into Microsoft's operating system could backfire because that assumes customers will upgrade their operating system just to get it, he said.

Netscape also announced it has submitted a proposal to the World Wide Web Consortium to establish its Meta Content Framework as an open standard. This framework provides a common way for Web sites and corporate intranets to describe their content in a summarized form, allowing for easier navigation, indexing and searches, Netscape said.

Johnston is a correspondent with IDG News Service in Munich.

Worldtalk tool to thwart e-mail threats

By Paul McNamara
Santa Clara, Calif

Mindful that customers still may be jittery about jumping into Internet messaging, Worldtalk Corp. has rolled out what is essentially an e-mail safety net.

WorldSecure Server is a Windows NT-based package that sits between a company's firewall and messaging server. It performs a host of tasks designed to make e-mail exchanges among trading partners more secure.

The software defines and enforces e-mail access, security and encryption policies; scans for viruses; controls spam; and provides an audit trail for business transactions over Simple Mail Transfer Protocol.

WorldSecure's support for the emerging Secure Multi-purpose Internet Mail Extensions standard allows encryption to take place automatically at the server before e-mail is forwarded.

A previously announced WorldSecure Client, although not required, is available for use at intranet sites where there are not enough end users to justify having a server.

Worldtalk's server and client software support Lightweight Directory Access Protocol and X.509 digital certificates.

While many of WorldSecure's features are available piecemeal from other vendors, industry analysts and customers said the Worldtalk package stands out because it is complete and has the ability to work with existing messaging systems, even in heterogeneous environments.

"[WorldSecure] appropriately segregates information flow," said Jim Hurley, an analyst with Aberdeen Group, Inc. in Boston.

"For instance, [a company] can keep supplier A from seeing supplier B's mail and information. That's really what people are trying to do," he said.

One Worldtalk customer who expects to deploy WorldSecure sees the server-based security focus as key.

"Although there are other security products out there, this one does my sendmail security right off my firewall, off Port 25," said Ray Freiwirth, a messaging manager at the corporate division of Time Warner, Inc. in New York. "I haven't seen any other products capable of doing that."

WorldSecure's architecture will save network administrators time and expense, according to the vendor.

"With server-based encryption you don't have to roll out a public key infrastructure for every user in the organization," said Simon Khalaf, vice president of marketing at Worldtalk. "That's the most expensive and laborious thing to do."

Scheduled to ship next quarter, WorldSecure Server will be priced starting at $3,995 for a 50-user license. The client is available now and costs $89 per seat.

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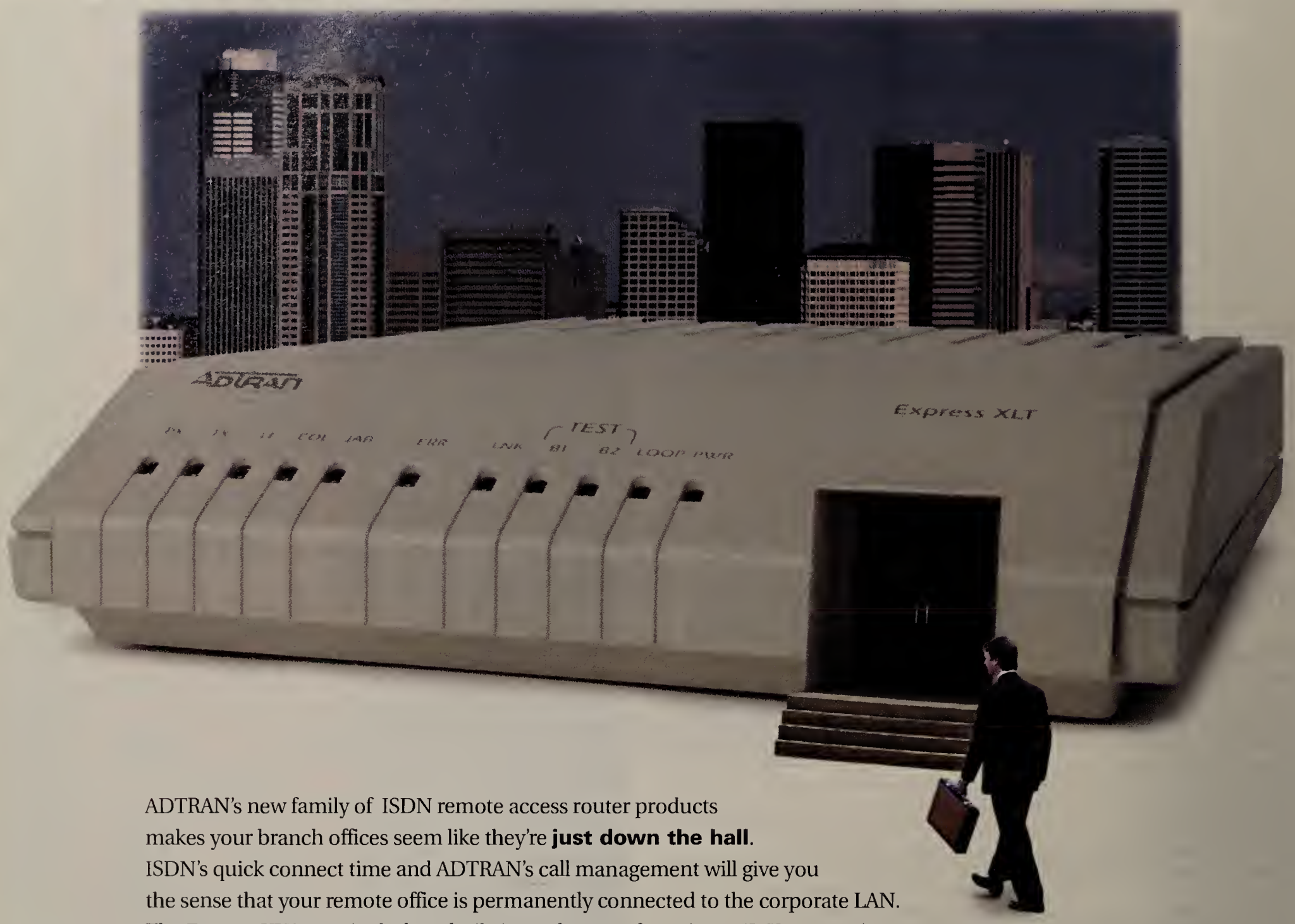

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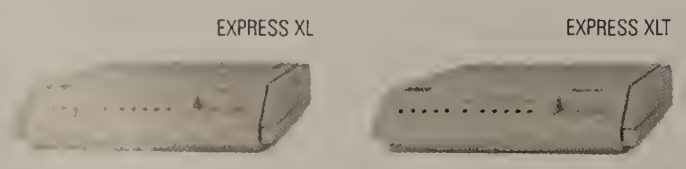

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'NET INSIDER

Who is wearing the blinders?

Reality seems to be quite different depending on where you stand.

Clearly, the general assumptions about the future role of ATM in data networking have changed significantly over the past few years.

Only a few years ago, the majority of pundits seemed to feel that ATM was going to take over the data networking world. It would become ubiquitous and replace all current technology. There were a few of us weirdos who disagreed and were regarded with a touch of scorn, but so it goes in the pundit biz.

Scott Bradner

Various factors conspired to make ATM's path to ubiquity more than a little rocky. The price of 10M bit/sec Ethernet switches dropped precipitously, 100M bit/sec Ethernet became widely available, Gigabit Ethernet started peeking over the horizon, ATM standards efforts lagged well behind expected time frames and the early ATM systems turned out to be quite a bit more complex than network people expected.

These factors have all but eliminated any idea that ATM will take over the world, but there are still two rather different views about ATM's future. I'm having a hard time figuring out which is closer to reality.

I have thought all along that ATM was going to be one of a number of important technologies in data networks of the future. I have thought that very high-speed, wide-area links and corporate backbone networks were most likely to be implemented with ATM. Also, for the foreseeable future, most large corporate intranets were going to be a mixture of ATM and other technologies with most LANs being Ethernet and low-speed WAN connections using frame relay.

But I am now beginning to hear another view, and not just from the radical IP community. More and more of the technical people I talk to are starting to relegate ATM to the dustbin of history as yet another technology that missed its window of opportunity.

Their claim is that alternative technologies are in place or imminent for whatever ATM features network designers actually need. 100M bit/sec Ethernet has already just about eliminated ATM as a viable desktop technology, and Gigabit Ethernet is doing the same for the campus backbone.

In the wide-area, the recent announcements of very high-speed frame relay capabilities with 155M bit/sec available soon and 622M bit/sec available within a year would permit the telephone companies to provide connectivity services with link speeds that only ATM and Synchronous Optical Network (SONET) were able to previously support.

For a number of financial and physiological reasons, many phone companies have been reluctant to enthusiastically market SONET. They also claim that the type of quality of service ATM provides is not what is needed in real-world networking, particularly where it will not be end-to-end (Ethernet at the ends) and where you can throw bandwidth at the local campus backbone.

I still think ATM will be a part — size to be seen — of our networking future, but I am starting to worry that maybe I'm just wearing blinders and do not see the handwriting on the wall. Or is it the ATM-is-dead crowd that has the blinders on?

Disclaimer: Harvard asserts that it understands reality so the above confusion must be mine.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached via the Internet at sob@harvard.edu.

Atreve

Continued from page 39

"A lot of the same issues plaguing distributed computing in the past were starting to emerge for the Web," said Swapnill Shah, Atreve's president. "Some of [Open Horizon's] customers were moving their applications to the Web and found the Web didn't let them scale up, or achieve the performance levels they needed."

Webspective contains several components, including agents that run on each Web server at a site. The agents feed information about the Web servers' health and the health of their various JavaScripts, Common Gateway Interface programs and database access programs to another component called Site Monitor. The information compiled there is used by the Traffic Manager, which determines the best route for incoming Web requests.

If a Web server or one of the application components on it fails, the Traffic Manager can reroute requests to other servers.

Similarly, as the Web requests increase, the performance information from the agents is used to balance the traffic load among the servers.

Site Monitor can be programmed with a set of rules that instruct the Traffic Manager on how to handle certain traffic or what to do when a Web server is not available. "We can handle unexpected traffic spikes by preconfiguring Webspective to jump-start a spare Web site or extra servers [when needed]," Shah said.

The information sent to Site Monitor also can be funneled into a relational database via a Java Database Connectivity link. A Webmaster can ferret through the information with an SQL or data mining tool to uncover trends.

Webspective 1.0 is entering beta tests at eight customer sites. Atreve plans to release the product in early August and will announce pricing at that time.

Release 2.0 will add support for the Internet Inter-ORB Protocol and Distributed Component Object Model, both of which support distributed object communications. Other features will include the ability to monitor Web server interactions with backend databases and applications.

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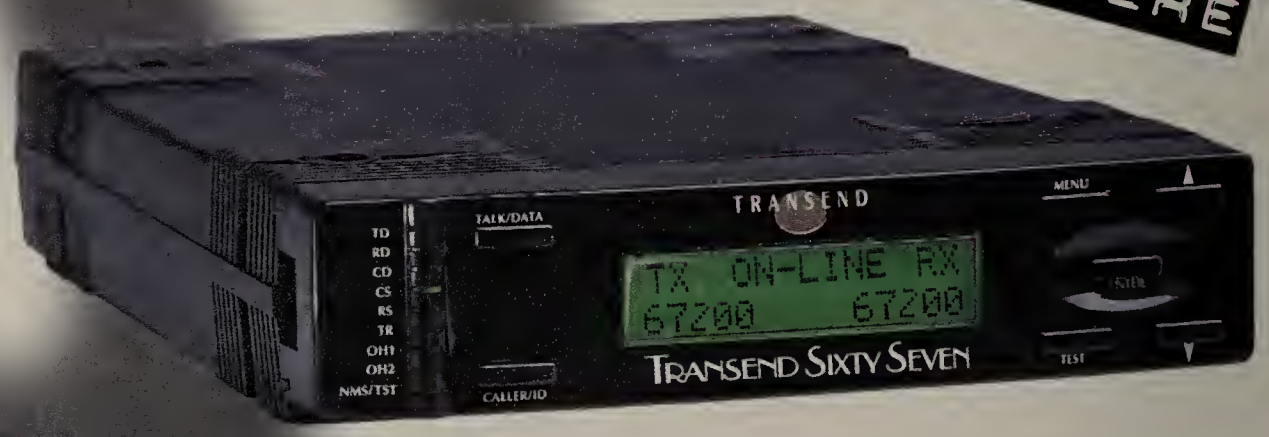

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I want to turn a pair of NetWare 3.11/3.12 file servers into a standby system. One of the 3.11 servers has four disk drives containing SYS, VOL3 and VOL2, which spans two drives.

I'll need to remove the VOL2 and VOL3 drives, but I need the data on them.

How can I put those drives and the data on them on a 3.12 file server that already has a VOL2 and VOL3?

Daniel Ferraro, network administrator, New York University College of Dentistry

You should be able to move the volumes without losing any data, but you'll want to take a few precautions.

For starters, make at least one backup, if not two, and run a compare pass against the backup to verify data integrity.

In addition, record the trustee directory assignments granted to each directory on the drives and groups to which these correspond.

After moving the drives, you'll need to grant the rights to these directories to groups residing on the new server.

To reduce the possibility of problems, move the volumes one at a time —you'll need to dismount each volume and rename it using the Install NetWare Loadable Module.

Before moving a volume, run at least one Vrepair pass against it.

After moving a volume, bring the server up.

This will provide a point to go back to if a volume doesn't come up after the change.

As you move each drive, make sure the drive's SCSI ID isn't already in use on the new server.

Finally, make sure you have sufficient memory to handle the caching of the volumes once they're mounted.

I recommend at least 16M bytes of RAM in the server for each 1G byte of disk space that will be mounted — not including mirrored or duplexed drives.

DSL answers the need for speed

Digital subscriber line technologies promise faster access to the Internet.

By Dev Gupta

You can't turn around these days without reading about digital subscriber line (DSL) technology.

Allowing high-speed transmission over existing copper lines, DSL provides a handy solution to the problem of high-speed access to the Internet, graphics-intensive Web sites, electronic commerce, telecommuting and integrated services of voice, video and data.

Once in place, DSL can set up a high-speed pipe — 7M bit/sec downstream and 1M bit/sec upstream — between end users and corporate or Internet-based resources.

In addition, deregulation has forced the doors of competition in the local loop wide-open, so service providers are looking to technologies such as DSL to help them provide the services consumers want.

All DSL technologies involve a basic configuration of a DSL-based modem at each end of a copper line.

One modem is located at the customer premises and the other at the telco's central office, usually in combination with a multiplexer.

Corporate data traffic is aggregated over existing copper lines at a DSL Access Multiplexer (DSLAM) located in a central office.

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The DSLAM moves traffic onto an ATM or frame relay-based network, which delivers the traffic to the corporate data center. Remote telephony signals are handled by existing voice switches.

Most vendors providing DSLAMs are basically providing the bottom two layers of the Open Systems Interconnection model: the physical layer and the link layer that provides multiplexing into the backbone.

Twisting DSLAMs

It is here at the mux where some new twists on DSLAM technology are emerging.

For example, a technology called Advanced Digital Subscriber Line Access Multiplexer (ADSLAM) uses a technique called "multiplexing on a virtual circuit" that allows multiple users to be aggregated onto a single VC.

This feature would enable users to reduce network congestion on existing links and eliminate the need for additional multiplexer ports as the net grows.

ADSLAM also allows for address scaling, which lets the multiplexer automatically assign temporary IP addresses to subscribers for quick access to the Internet.

In addition, the technology provides quality-of-service (QoS) support that uses multiple queues and packet scheduling to ensure that timeout-sensitive applications get the bandwidth they need.

QoS is also important because DSL platforms will need to support multimedia traffic with a variety of service-level requirements.

Adding QoS also should enable carriers deploying DSL gear to tailor services offered to users.

Despite the numerous advantages of deploying ADSLAM or any DSL technology, there are several technical and cost concerns that must be overcome before we see widespread deployment.

For example, the quality and length of actual local loops can limit DSL bandwidth. If the user has to be within a limited range of a central office, DSL's use as a telecommuting technology could be limited. This is an issue that is being resolved by carriers and makers of DSL gear.

Lingering problems

There are also regulatory issues, and DSL vendors must work to resolve standards issues so it will be possible to connect one DSL modem to another vendor's central office equipment.

Another lingering problem for DSL is general skepticism about the technology.

"Been there, done that" is a frequent comment, referring to the hype and unfulfilled promise around ISDN to which DSL is often compared. ISDN never quite lived up to its full potential, and many are hesitant to jump on the DSL bandwagon for fear of being left on the trail a second time.

Why should DSL be any different? For one reason, there is a growing need for DSL because of the demands of the graphics-intensive World Wide Web.

When ISDN was first launched, the Internet was not the phenomenon it is today. End users have been spoiled by the high-speed access offered at the office.

In addition, DSL is easier to install than ISDN because it does not require significant infrastructure upgrades.

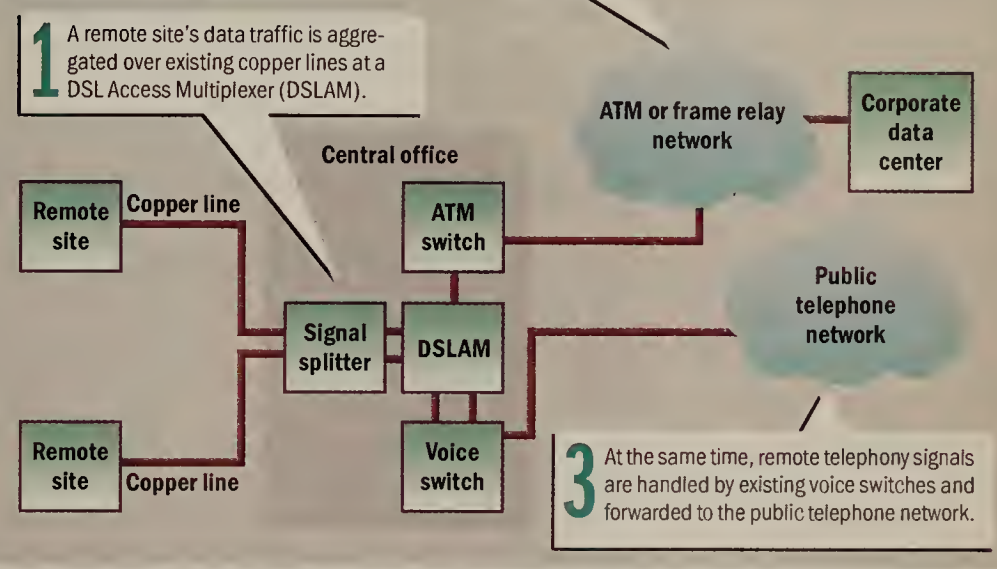
ISDN comparisons aside, there is a huge market of consumers out there crying for the faster access and increased bandwidth DSL can provide.

Gupta is president and chief operating officer of DAGAZ Technologies, Inc., a developer of ADSLAM technology. He can be reached at guptad@dagaztech.com.

HOW IT WORKS

How a DSL network works

Digital subscriber line provides high-speed access — 7M bit/sec downstream and 1M bit/sec upstream — to Internet resources, graphic-intensive Web sites, telecommuting applications and integrated voice, video and data services.



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ATM's real problem

Last week, The Tolly Group and *Network World* convened the top token-ring vendors to discuss the future of that technology. But after talking for hours about token ring at the desktop and server, token-ring switching and high-speed token ring, I left the meeting thinking about another struggling technology: ATM.

Once heralded as a panacea, ATM has a problem these days. It's a problem that's enabling other technologies — such as high-speed Ethernet — to squeeze ATM out of a job it has been preparing for for years: running your backbone.

Many of the vendors at our roundtable see ATM as the preferred, standards-compliant option for token-ring and Ethernet customers looking to upgrade their backbones. But they claim customers are leery of implementing ATM because they fear ATM's complexity, and the vendors blame the press for bashing ATM.

But the bigger problem ATM faces is this "one-stop shop, let the customers decide" mantra that the most influential network companies are chanting today.

The irony is that these vendors have spent years developing ATM, bringing down the cost and complexity and incorporating support for key features such as Ethernet and token-ring LAN emulation. But at the same time, they have been relegating ATM to an ever-narrower status by quickly pouncing on every new technology that emerges. IP switching? Gigabit Ethernet? Sure, we'll have 'em, and they'll all be equal partners with ATM in this vast array of offerings we provide.

This couldn't come at a worse time for customers, who are desperate for clear direction on network architecture. They're looking for vendors to tell them where they should be going, but the big vendors are going in every direction — fearful of being left out of any hot, new market.

There are exceptions. Madge Networks, for one, remains adamant about ATM as the backbone of choice. FORE Systems also has resisted, at least so far, the temptation to be pulled in every direction — even though Wall Street doesn't seem happy with FORE's focus. In a recent interview, FORE CEO Eric Cooper said, "There are a lot of vendors that are trying to be a supermarket of networking... But we believe ATM is the best match for solving the needs of the extended enterprise from the desktop to the central office."

Customers have to make strategic choices now, and it would make things a lot easier if they really knew where vendors stood. Sure, it's nice to know that Bay, Cisco, Cabletron, 3Com and others will have different types of uplinks and adapters. But it's more important for buyers to know which technology horses they are really backing.

The sad truth is that backing everything may be the same as backing nothing at all.

John Gallant, editor in chief jgallant@nww.com

Java Break • Ted Young

Tips for successful Java application development

It happens all the time with new technology: First comes the hype, then the reality, then the backlash because the reality doesn't live up to the hype. And then, finally, people recognize what the technology is truly good for.

Is that what's happening with Java?

Well, let's acknowledge that Java is not perfect. But then neither was Visual Basic when Microsoft released Version 1.0. In fact, some of the recent backlash against Java sounds similar to the early complaints made against Visual Basic: It was slow, you couldn't do everything you could do in C/C++ and no Macintosh version was available. Some of the comments I hear about Java include: It's slow, you need to write native code to access the operating system-specific features and the Mac version doesn't work.

It took years for Visual Basic to become fast enough — with the help of faster hardware — and have sufficient features to be used for serious business applications. It wasn't until Version 3.0 came out with database access that it really took off in terms of corporate usage, as developers used it for front ends to databases.

Recently, I've come across poorly researched articles that quote developers — who are often Microsoft Solution Providers — as saying, "Java doesn't work; I'm going back to Visual Basic."

I won't bother debating the benefits of Java vs. Visual Basic because I don't see the switch from Visual Basic to Java happening until we get better, more stable development environments based on the JavaBeans component architecture, such as IBM's VisualAge for Java, Asymetrix's SuperCede: Java Edition or Symantec's Visual Cafe. No, the big movement will be from C++ developers who are fed up with spending 75% of their time worrying about memory leaks, pointers gone awry and other problems.

If you're having second thoughts about creating corporate applications in Java because of the bad press, you're not alone. The solution may be to rethink your approach to Java development.

Don't go after a big project initially; pick a smaller project that you would normally implement in C++. Make sure it plays to Java's strengths: cross-platform, network-savvy, multithreaded and so forth.

Think about how you're going to distribute it if it's a client-side application, such as a point-of-sale application or a front end for a human resources database. You can make it an applet, but be careful about the problems with Java support in the 3.0 browsers. They're not applet killers, but they can cause headaches. Most problems are well-known now, and you'll find workarounds in Java books, Web sites, newsgroups and e-mail lists. You'll find real-world articles at the JavaWorld site at www.javaworld.com; lots of good Web links at www.apl.jhu.edu/~hall/java/; and the archive of the Advanced Java e-mail list at http://metadigest.xcf.berkeley.edu/archive/advanced-java/.

You can distribute your applications using Marimba's Castanet technology, which will run your applications better than browsers. Finally, there's always the typical way to install the Java application: by sending around a zip file or an executable installer.

It depends on what kind of access the users need. Will it be an occasional use? Browser-based applets are the best solution here. Regular use with frequent updates? Castanet is a good way to go in this case. Frequent use with rare changes to the application? Use a regular installation procedure.

The key to successful application development in Java — in fact, in any language — is to play to the language's strengths and always shoot for incremental deliverables. Design your applications to be extensible and grow them so they adapt to the user, not the other way around.

Young is president of Advanced Web Technologies Corp., a Java training, consulting and outsourcing firm in New York. He can be reached at (212) 487-9064 or via the Internet at tyoung@javatrain.com.

Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

Questionable quote

Your article "NT at risk of hack attacks" (May 19, page 1) does readers a disservice by quoting William Hampton as saying, "Forty-bit is easy to crack." On the contrary, 40-bit encryption is very secure. The problem is that Mr. Hampton defines "easy" as something like, "If I'm in that 0.001% bracket of people who are in the business of cracking codes, and I have supercomputer resources at my disposal, then it's easy."

For 99% of business, 40-bit encryption is quite adequate.

Norman Katz
Senior software engineer

Treats in store for token-ring users

The announcement of Cisco Systems, Inc.'s 100M bit/sec Inter-Switch Link (ISL) uplink for its next-generation token-ring switches and a similar offering promised by 3Com Corp. are much-needed good news for beleaguered token-ring users (*NW*, May 26, page 1).

Though billed as Fast Token Ring gear, Cisco's ISL and 3Com's offering initially will be just very fast "fat pipes" between token-ring switches or between token-ring switches and multimedia campus switches such as Cisco's Catalyst 5000. And while technically feasible, 100M bit/sec Fast Token Ring to the desktop currently is not even a firm promise, let alone a true migratory option.

However, token-ring users should not despair and start making urgent plans to migrate Fast Ethernet or even ATM to the desktop. The 100M bit/sec uplink initiative is part of a much broader set of token-ring switching features slated to hit the market by midsummer, notably from Cisco. These features will address the bandwidth, migration and total cost requirements of token-ring users for at least the next three to four years.

For starters, Cisco, working in conjunction with Olicom, Inc., intends to offer a 200M bit/sec, full-duplex, ISL-based, token-ring network interface card (NIC) for LAN servers. Such a NIC offers considerable performance and price advantages over a full-duplex Fast Ethernet or FDDI-based solution.

The ISL NICs, like the ISL uplinks, will support full-length (4,500-byte) token-ring frames. Ethernet and Fast Ethernet cannot support frames that are larger than 1,518 bytes. This smaller block size is a performance-hindering factor for token-ring interactions such as file transfers and server downloads that use large blocks for data transfer.

Though there are some software implications, Cisco and Olicom can, at least in theory, extend the ISL Server NIC to work on client PCs. This would provide the utopian dream of 100M bit/sec, Fast Token Ring to the desktop. Right now, Cisco is gauging customer demand for such a solution.

The prospect of increasingly higher bandwidth to the desktop is always appealing. However, true justification for such bandwidth, particularly in terms of cost and the disruptive nature of upgrades, is often difficult to make.

The demand for increased token-ring bandwidth to the desktop is a particularly thorny issue. Unlike their Ethernet counterparts, most typical 16M bit/sec token-ring LANs are not experiencing severe congestion or marked degradation in performance.

Most of the bottlenecks in token-ring environments are related to the backbone interconnect. In the majority of such instances, the problem has been fixed by using token-ring switches to attach individual LAN segments to LAN backbones and backbone servers.

The bulk of token-ring users, to date, have not even considered token-ring switching at the workgroup level, which would provide dedicated 16M bit/sec bandwidth to each desktop. This is not just because of the costs; the need has been hard to determine and justify.

Next-generation token-ring switches, however, will target workgroup switching. They will offer full-duplex capability and high-speed, cut-through switching on every port, in addition to lowering the current per-port cost by at least 45%. Therefore, you will have an immediate and cost-compelling option for boosting token-ring LAN performance without undertaking any widespread and costly upgrades or technology changes.

Next-generation token-ring switches will also offer considerably more fat-pipe options, including ISL-like 100M bit/sec token-ring uplinks, 155M bit/sec ATM uplinks, FDDI and even 100M bit/sec Fast Ethernet.

With cut-through, full-duplex, 200M bit/sec token-ring ISL NICs for LAN servers and these fat-pipe options, you will be able to significantly improve the overall bandwidth and performance of your token-ring environment before you have to start thinking about the need for 100M bit/sec token ring to the desktop.

In general, the cost-effective, bandwidth-enhancing facilities this summer's crop of token-ring switches will offer should satisfy the needs of most token-ring environments — whether at the workgroup or backbone-interconnect level. Fat-pipe options should also facilitate interworking with other technologies, such as ATM or Fast Ethernet, and pave the way toward wholesale migration to another technology at a later date.

The 100M bit/sec token-ring uplinks are certainly an auspice for token-ring users. Though 100M bit/sec Fast Token Ring to the desktop may still be a distant dream, there are enough exciting innovations coming online this summer with the next-generation token-ring switches to keep users happy for a long time to come.

Gurugé is an independent consultant specializing in internetworking and IBM network architectures. He can be reached at (603) 878-1303 or via the Internet at aguruge@mcimail.com.

MARTY BRAUN

Sony Electronics, Inc.
San Diego

Sharing the blame

Regarding your story "Nets, Inc. bankruptcy ignites Manzi debate" (May 19, page 8):

His irrespective of observations about Jim Manzi's character, skills, abilities and weaknesses, Nets, Inc. simply failed to become a viable business. The entire executive team, as well as the investors, share some blame.

First, the firm was a start-up that operated like an established company. It had nine senior executives, including a hired president, and peaked at 300 employees.

Second, Nets, Inc. operated a Web site that attempted to fulfill its mission of bringing buyers and sellers together without the aid of software logic that would allow the Web site to behave as a value-added application.

www.nwfusion.com

Go online to read letters about recent columns by Mark Gibbs.

Third, the company attempted to establish its business without an industry focus, taking on the content, marketing, sales and technology burden of an established company rather than bootstrapping on the basis of one or two markets at a time.

We get validation every day that the primary business of using a Web application — to bring together buyers and sellers of products that involve high-cost/high-consequence business decisions — is useful, appreciated and, with careful investment and time, viable.

Phil Ressler
Vice president, marketing and content
inquiry.com, Inc.
San Mateo, Calif.

Warp Server rules

Regarding your editorial "NT is scalable ... yeah, you bet" (May 26, page 42):

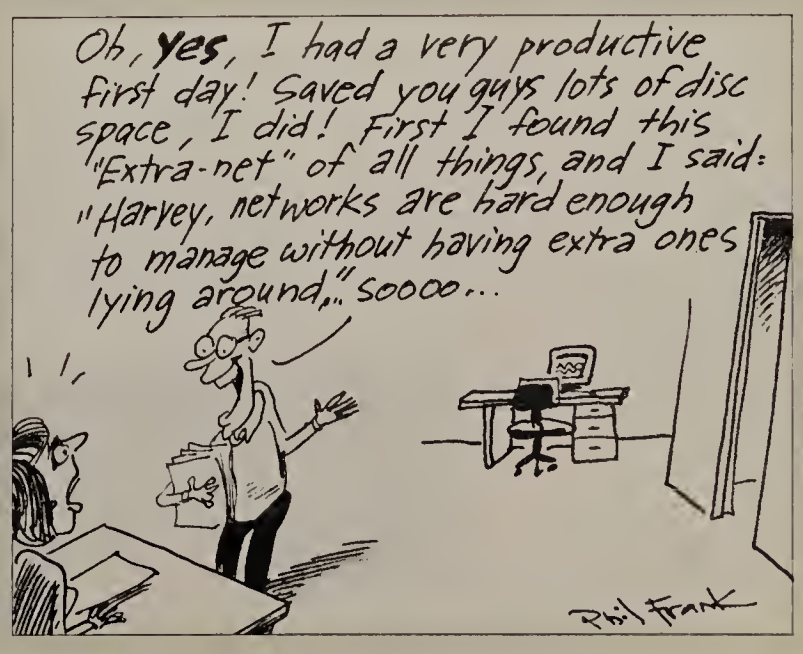
I agree with most of what you said. You did, however, omit one operating system that runs on Intel processors, scales to 64 CPUs today, handles larger numbers of users and serves files on one processor 30% faster than NT on four processors.

This OS also is object-oriented in design (NT is not) and is on its second-generation transaction server. It is also more stable and has greater availability than NT. I'm talking about OS/2 Warp Server Advanced SMP.

While NT bites into Unix sales, it's barely touching Warp Server sales. There must be a reason for that, even if IBM isn't saying much about the product in the press.

Curtis Maurand
Systems administrator and Webmaster
echoMEDIA, Inc.
Newport, R.I.

Teletoons



...in this high-stakes environment, who really stacks up?

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HOW TO STEER CLEAR OF

Frame relay traffic snarls

By Paul K. Wickre

Domestic frame relay usage is expected to more than double in the next two years. Usage will expand from 160,000 interexchange carrier (IXC) ports in service at the end of 1996 to more than 400,000 by the end of 1998, a situation that threatens to make carrier backbones look like major highways on a summer holiday weekend.

Increased traffic is straining the ports now in service, while provisioning delays mean the queue of new customers waiting to obtain connections continues to grow. In short, carriers are having a hard time keeping up with demand, so you'd be wise to anticipate demand-related problems and come up with contingency plans.

"We are seeing increases of traffic levels measured in terabytes in the 15% range month-to-month," says Melanie Hanssen, senior manager of frame relay marketing at MCI Communications Corp. in Irvine, Texas. LDDS WorldCom and Sprint Corp. confirm that their traffic levels also are growing by 15% to 20% per month.

This growth is primarily off the existing installed base of frame relay users; it will be compounded by the migration of SNA private lines to frame relay services. IXCs' frame revenues in the U.S. are currently in the $1 billion range, while private-line revenues eligible for frame relay conversion total about $4.9 billion.

"The 1997 to 1998 frame relay scenario will look like the snake that swallowed the football. Whether or not the carriers can digest the load and Fortune 1,000 private-line demand while maintaining service quality remains to be seen," says Fred McClimans, CEO of Current Analysis, a consultancy in Ashburne, Va.

Roadblocks ahead

In the past, carriers engineered their networks to stay ahead of demand. For example, Sprint has historically followed a fixed engineering rule to maintain capacity 30% above the combined aggregate load of all access ports. Such schemes were possible because the frame relay growth rate was not nearly as extreme as what is projected for 1997 to 1998.

Current frame relay users say their networks have been relatively trouble-free. Dropped sessions and lost data haven't been much of a problem yet because networks have been lightly loaded. In addition, all major carriers, such as AT&T, MCI and Sprint, operate DS-3 redundant backbones.

But just wait — the massive growth driven by Internet-based multimedia applications, increased LAN traffic and the mass conversion of large, branch SNA shops will leave carriers with their hands full.

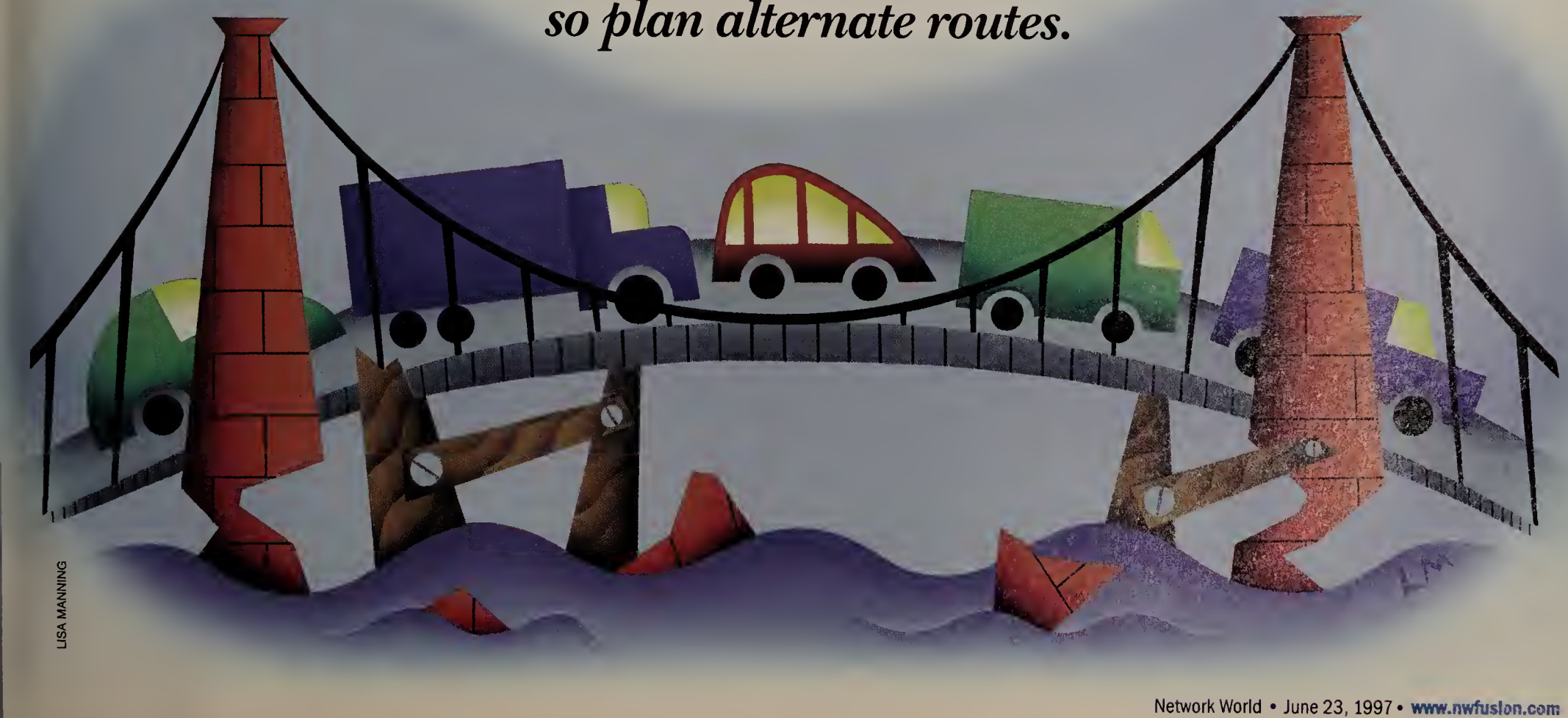
Frame relay carriers today offer service-level guarantees based on several factors including network delay. The major carriers generally offer one-way network response times of less than 250 msec. For example, Sprint guarantees 90 msec for a frame relay T-1 line, 105 msec for 256K bit/sec service and 115 msec for 56K bit/sec service. MCI has pushed the envelope further by guaranteeing 70 msec within the network cloud, not counting serialization delay from the customer premises equipment (CPE) device. These figures are well within the timing tolerance of transaction-processing systems.

The key is that network delay is a function of traffic load. As traffic volume increases at peak times, so will delays. These delays may cause dropped sessions and lost data.

Network delays and transit times aren't the only concerns. By its nature as a fast packet service, frame relay lacks error correction. Frame relay assumes the higher layers within the application protocol, such as Synchronous Data Link Control for SNA, will perform the error recovery routines. Unfortunately, older protocols still in use, such as asynchronous and bisynchronous, don't have this capability.

The widespread use of poll spoofing techniques may also strip SDLC away, leaving

Burgeoning growth may lead to congestion on frame relay nets, so plan alternate routes.



LISA MANNING

SNA packets vulnerable. Even worse, frame relay allows for packets to be marked discard-eligible during periods of peak usage, bursting or severe congestion caused by internal network failures such as line cuts. If the CPE device is transmitting multiprotocol traffic above the committed information rate and the discard eligibility bit is turned on, there's a potential for serious data loss.

ENSURING FRAME RELAY AVAILABILITY IN THE FUTURE

- Order separate PVCs by protocol at installation time.
- Participate in carriers' free trials to stress-test the solution during the early proof-of-concept stage.
- Insist on carrier simulation of response time and delay throughout the rollout to ensure scalability.
- Let your carrier provide transport and equipment through a managed services offering that allows for rapid fault diagnosis and service restoral.
- Ensure that your service level agreement (SLA) includes both performance and configuration management.
- Draw up an SLA that includes credits for downtime.

Today, carriers compete on price and service variables, but in the future they will probably differentiate their classes of service offered. Expect pricing structures to evolve based on quality and class of service.

How carriers will address service options, pricing and value-added features is still in the early planning stages. However, several carriers recently announced priority levels for permanent virtual circuits (PVC). For instance, MCI, Intermedia Communications, Inc. (ICI) and LDDS WorldCom plan to roll out several levels of PVCs. The highest priority would be reserved for delay-sensitive traffic such as SNA or voice, the next level would be for mission-critical IP and the following levels would trail off in importance and quality.

Although this is a step in the right direction, priority PVCs have the same flaw as reservation schemes. If the carriers don't impose a premium pricing mechanism on superior service, all users will reserve bandwidth or claim that all of their traffic should be in priority PVCs across the backbone. Think of it this way: If all travelers could fly first class at no additional cost, business, tourist and coach passengers would all clamor for first-class amenities. Price differentials force customers to make a rational, cost-benefit justification. MCI has plans to charge a "small differential" for the priority PVC, and Sprint also may vary pricing for its application-based class of service, scheduled for launch by year-end.

Steering clear of potholes

While service levels have been generally acceptable for large branch networks, you should take proactive steps to enforce service level agreements (SLA) and ensure future frame relay availability.

One such step would be to order frame relay on a trial basis, taking advantage of offerings such as Sprint's SNA Advantage Plus program, and go through rigorous application testing. It is reasonable to order separate PVCs for delay-sensitive traffic such as voice and synchronous polled protocols such as SNA. Similarly, IP traffic from LANs could be placed on a separate PVC. If performance problems arise, the existing PVCs are already solving the reinstallation, addressing and mapping problems. The carrier would only need to add priority provisioning to the logical connections as previously defined. The minor incremental cost of separate PVCs and anticipated slight premiums for prioritization are worth the expense for mission-critical applications.

For the utmost degree of flexibility, consider frame relay-to-ATM interworking offers that carriers are now rolling out, particularly if your traffic mix will include data, voice and video.

As a safeguard against finger-pointing, have your carrier bundle intelligent CPE into a managed services offering. Second generation frame relay access devices and routers are increasingly sophisticated in prioritization schemes and proprietary error recovery from remote branch to host. In addition, incorporating the access layer, tail circuit, transport and remote termination simply makes good technical and business sense. More than 76% of Fortune 1,000 companies prefer this approach, according to Frame Relay Systems and Technology's recent survey.

Managed service also lets the carrier provide end-to-end network tuning, and supplies the tools needed for rapid fault diagnosis and service restoral. For example, vendors are increasingly incorporating a Remote Monitoring (RMON) probe, remote trace capability or software diagnostic product within the CPE. Visual Networks, Inc. of Rockville, Md., Sync Research of Irvine, Calif., and Concord Communications, Inc. of Westborough, Mass., offer a variety of products for remote diagnostics, troubleshooting and circuit management. Although these features increase the initial cost of deployment, they can deliver a huge return on investment by speeding service restoral to curtail lost revenue.

The managed service agreement should include performance and configuration management. The carrier will typically provide tools such as a customer-site network-performance monitoring workstation.

After selecting a network design, PVC prioritization, CPE choices and managed service, back up the whole frame relay network with an SLA that offers credits for downtime. This is a contractual relationship that ensures monthly statistical quality of service (QoS) for your entire enterprise. Negotiate this in conjunction with terms of service and volume of business and enforce it by using per-site reports of outages and performance.

Finally, set aside a reserve budget of 5% to 15% for anticipated priority PVC surcharges in case performance issues and congestion problems arise next year. Forewarned is forearmed.

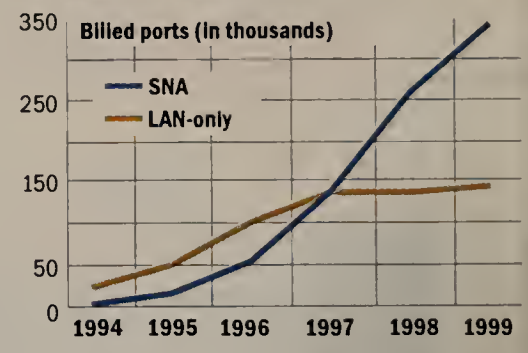
Frame delay, frame loss ratio and response time measurements will begin to deteriorate and impact applications. Frame relay was never designed for the mix of traffic that now runs on the carriers' net. The notion of QoS comes from ATM, where constant bit rate and variable bit rate could be specified on an individual connection-oriented basis. Because most carriers plan to use ATM in the backbone and frame relay for the access layer, extending ATM QoS out through frame relay nets remains an architectural issue. Priority PVCs are a start, but more sophisticated schemes need to emerge, fully mapping ATM QoS provisions into delivered frame relay classes of service.

Although the ATM and Frame Relay Forums have debated this and issued standards — Data Exchange Interface and Frame-based User Network Interface — requests for comment that address mapping service quality from ATM to frame relay have yet to be commercially adopted. In the long run, carriers will offer proprietary approaches that will approximate what the standards bodies have tried to implement.

Understanding the growth scenario ahead, users should proactively work with their carrier partners to examine or implement these issues. With a bit of planning and foresight, frame relay users will continue to receive superior price performance for their geographically dispersed branch networks without unforeseen headaches.

Wickre is a principal and cofounder of Frame Relay Systems and Technology, a Washington D.C., consultancy specializing in strategic planning, business development and marketing issues in the broadband packet market. He can be reached at dcwick@aol.com.

FRAME RELAY PORT GROWTH CONTINUES TO CLIMB



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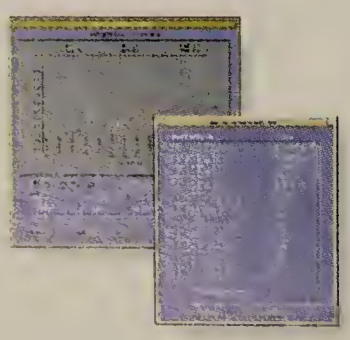

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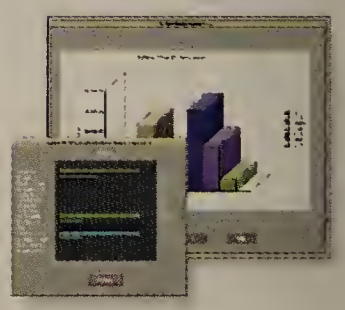

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sync

Keeping an eye on NetWare and NT

CompuWare and BMC offer different takes on monitoring tools aimed at helping you boost network performance.

By William Rinko-Gay

Is your network under control? Are you sure? Managing your network is more than an exercise in keeping track of assets and watching for problems — you also need to know how changing traffic patterns affect performance. To monitor NetWare and Windows NT-based networks, you need real-time information on activity, with a graphical view of the network and customizable reports of the data. Ideally, your management software should even spot trends and make recommendations on improving your network's performance.

We compared two recently released products that take slightly different approaches toward monitoring network performance. CompuWare Corp.'s EcoSCOPE provides application and hardware activity monitoring by looking at network traffic on the wire itself. It provides a good graphical depiction of the network and generates reports that are easy to comprehend so you can locate the source of any network problems. Those features helped earn it our Blue Ribbon.

BMC Software, Inc.'s Patrol monitors and controls parameters in the servers and applications running on the servers. For this reason, it is less difficult to deploy. But it lacks a graphical representation of network connections and doesn't provide any tools to help you with the big picture.

Both products are useful, but neither is perfect. For instance, neither yet supports Remote Monitoring 2 (RMON2), which will eventually provide a standard for application monitoring.

Figure 1: *Drilling down in Patrol allows you to see the network traffic patterns on your NT server in real time.*

Architecture

CompuWare's EcoSCOPE uses Super Monitors, software installed on any node on each network segment, to collect activity information for that segment. Another component, Single View, collects data from the Super Monitors and uses it to create a topology map, which gives some graphical information on the state of the network. The activity information and topography map are also stored as part of the database when you close Single View.

Single View, which runs on any networked workstation, can do simple management of the Super Monitors, including changing data collection parameters and setting alerts to report dangerous conditions. You can generate long-term trend reports using the Reports Navigator, which relies on a real-time Microsoft Corp. Access engine supplied with EcoSCOPE.

Unlike EcoSCOPE, BMC Patrol is based on agents that run on servers. Patrol agents take advantage of Knowledge Modules (KM), files that tell the agents what to monitor and how to report it. These separately scripted programs provide tremendous flexibility. You can learn to write KMs to perform tasks or take advantage of the large number BMC provides. A single console can monitor the entire network or any portion — you identify the agents to be monitored when you install the console.

Each agent is represented on the console by an icon. Double clicking on an icon brings up the applications the KM is monitoring. Drilling down further you can look at instances of a monitored application, and finally, at the monitored parameters. On an NT server KM, for example, you can see network information such as total bytes transferred per second or processor information such as the percent of CPU time spent in the user space. Displayed data is updated in real time.

Patrol agents recognize dangerous conditions — such as overly full hard drives or poor response times — and sound alerts. They can also correct alert conditions if you program the KMs to do so.

Monitoring the network

EcoSCOPE provides relatively detailed information that can be used to troubleshoot network problems or evaluate planned changes. We could drill down through an element in our topology to see the conversations taking place and the longest response time. If the conversation was a recognized SQL transaction, we could even determine the nature of the transaction.

EcoSCOPE did a good job reporting on Oracle Corp. transactions on our Windows NT server, but not on our NetWare server. None of the database transactions showed up as Oracle transactions. We were able to use the application discovery feature to improve on this situation, but the difference across the two network operating systems was disappointing.

We also wished for a way to move the computers in the topology map to make the screen easier to read, especially on small monitors.

Unfortunately, EcoSCOPE displays all the data that's been collected from the Super Monitors in the database. When you're looking at the topology map, you see the collected activity over the entire monitoring period. The only way to see a real-time view is to create appropriately small collection increments (called intervals in EcoSCOPE) and manually select the increment you wish to analyze. To get an update, you must select a different interval to view.

This data collection information helps find persistent problems, but it makes troubleshooting a transient problem difficult. EcoSCOPE should provide a real-time mode for long-term analysis in which data is continually collected, but only data from the last collection interval is displayed, giving you a current view of activity.

CompuWare provides a full list of reports via Microsoft Access's real-time engine or via Access if you already have a licensed

ScoreCard

	EcoSCOPE	Patrol
Overall score	**7.5**	**6.6**
Real-time reporting (25%)	6	8
Trend analysis (25%)	8	6
Ease of use (25%)	8	6
Installation and deployment (15%)	8	6
Documentation (10%)	8	7

Scores are based on a scale of 1-10. Percentages are the weight given each category in determining the overall score.

NetResults

Product	EcoSCOPE Version 3.0	Patrol Version 3.1
Vendor	CompuWare Corp. (800) 521-9353 www.compuware.com/ecoscope/menu.html	BMC Software, Inc. (800) 841-2031 www.bmc.com/products/pat/index.html
Price	2 Single Views and 10 Super Monitors: $36,000	Agent: $15 per server, NT KM: $355 per NT server; NetWare KM: $4,500 for 1-5 NetWare servers; Oracle KM: $1,005 per Oracle server; Console: $5,000
Pros	▲ Intuitive to learn and use ▲ Data from different machines well integrated	▲ Extensible and flexible ▲ Offers server control and monitoring
Cons	▼ No real-time snapshot	▼ No integrated picture of entire network ▼ Difficult to learn and use

When you click on the Reports tool from Single View, EcoSCOPE imports your current database into Access, then displays a list of reports. You can select reports by protocol, application, server, workstation or a combination of these. Your ability to create custom reports is limited, but we did not need more than the predefined reports CompuWare provides.

Patrol provides a wealth of monitoring and control features that EcoSCOPE doesn't (see Figure 1, page 61). You can monitor each parameter the KM recognizes and send commands to applications or to an operating system from the Patrol console. While you are monitoring a parameter, Patrol updates the screen in real time to give you a current and continuous view of server or application performance. If the KM doesn't monitor a parameter you need to see, you can modify it or write your own KMs with the software BMC provides.

While these features are valuable, they take much longer to learn and require more effort to analyze than EcoSCOPE. Patrol's KMs are excellent at picking up on the parameters on each server and application to monitor, but it doesn't create an overall picture of how your network is doing. You have to drill down to each parameter separately and fully understand each one to know whether it contains information worth drilling down to. If you make a mistake and drill down to the wrong one, you may be required to close and open several windows to get back to the right one.

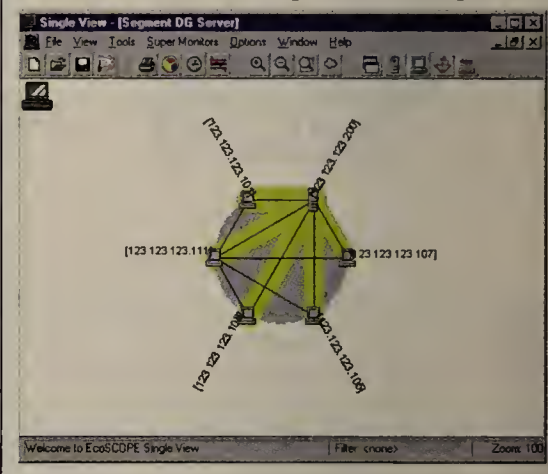


Figure 2: *EcoSCOPE's topology map provides clear information on the status of the network. Thicker lines represent more traffic.*

In short, Patrol does nothing to make managing your network easier except allow you to manage multiple servers from one location. You still have to integrate and interpret the information yourself, a task that requires a great deal of knowledge and skill.

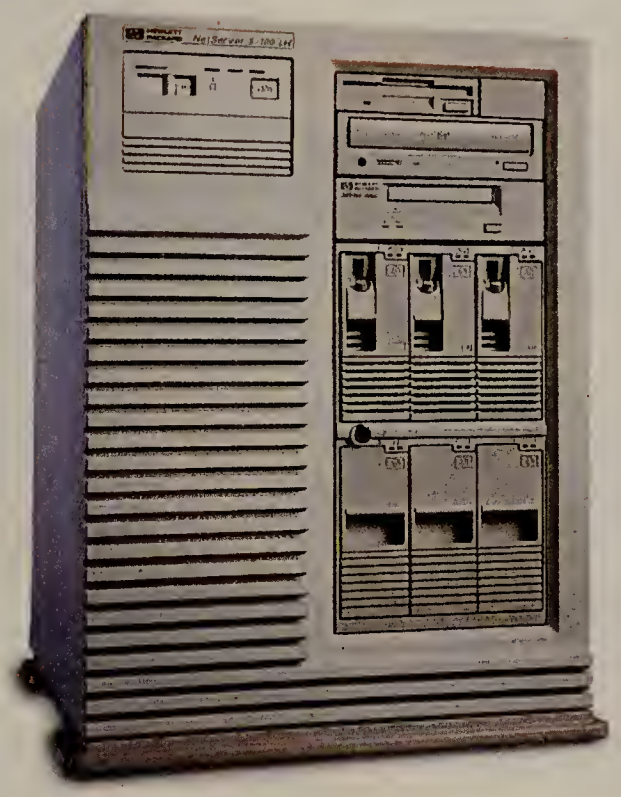
Patrol is more extensible, flexible and powerful than EcoSCOPE, but at the cost of integration of information from the different servers.

In EcoSCOPE, you can generate a long-term pie chart showing the percentage of total traffic generated from each protocol or application. With that information, you can drill down in the database to see whether the most frequently used protocol or application is becoming a bottleneck. With Patrol, you must go into the servers in real time to spot the offending component, which

HOW WE DID IT

The two applications we tested are network-independent. We connected both products to the network in our server test center, which includes five 100-MHz Pentium-based computers running Windows 95 and two quad-processor 200-MHz Pentium Pro servers running Novell, Inc.'s IntranetWare 4.11 and Windows NT Server 4.0. Our monitoring station was a 120-MHz Pentium-based computer running Windows NT Workstation 4.0. To connect the network, we used a 3Com Corp. OfficeConnect 10Base-T hub.

We monitored our network during normal operation. Our goal was to determine how well the network was keeping up with our demands. We looked for total bytes transmitted across the network, traffic information by computer, traffic information by application and details about particular transactions where available.



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be difficult if the problem is transient and disappears while you are investigating.

Setup

We set up EcoSCOPE on our test network easily. First, we installed EcoSCOPE's packet analysis service through Windows NT's Network Properties dialog. The packet analysis service isn't compatible with all network adapters, so check the list before committing to a purchase. After installing the driver, the Super Monitor installation routine configured the software on the workstation.

Configuring the Single View application was less intuitive. It was not clear that the topology builder, a topology map editor, was necessary only for items that Single View couldn't automatically discover. Because we didn't have any of those items in our network, we could simply collect our first set of data and the topology automatically appeared. We recommend making this the first option in the Topology Builder menu.

EcoSCOPE discovers applications on its own based on information CompuWare includes. It also provides information on "conversations" — transactions between nodes — that it can't attribute to applications. If you know an application well enough to recognize it from its data file extensions or its UDP port you can teach EcoSCOPE to recognize it as well.

This feature is helpful, but it could be easier to implement. For example, Super Monitor allows you to define application files by directory but not by extension. This is awkward because the operating system recognizes applications by file extension, not direcory. This means you must specify each directory that contains .doc files as being related to Word — a tedious task. If you have one directory with both .doc and .xls files, you can't distinguish the applications, although you can refer to the aggregate application by a generic name such as "file server."

It also could be easier to set Super Monitors to generate alarms. A large list box in the alarm dialog box contains all the applications Single View recognizes. We'd like to see some kind of hierarchical grouping of this list, by database, Web server, Notes server or other category, to avoid having to scroll through the large list every time you set an alarm.

Patrol was not quite as easy to set up. The console installation offers you a choice of which sets of KMs you want to install; none are set up by default.

You can enter the console in Operator or Developer mode. Operator mode is used for day-to-day network monitoring. Developer mode is used to change the way the KMs operate, reprogram the agents and do other development tasks that are run occasionally. The Operator and Developer modes don't share initialization information — identified agents and loaded KMs are not common between the two. If you don't realize this, you might be confused when your icons don't appear.

Because all the agents run on the servers, there are no issues with compatible hardware as there are with EcoSCOPE. Patrol can monitor any hardware that the server and workstation can access.

Once we had the console running, we had to identify the agents we were monitoring; there is no autodiscovery feature as with EcoSCOPE. Agents appear on the console as icons, but there is no connection information to give you a picture of your network.

Go online for:

- **EcoSCOPE's supported hardware**
- **A list of NOS and application Knowledge Modules bundled with Patrol**

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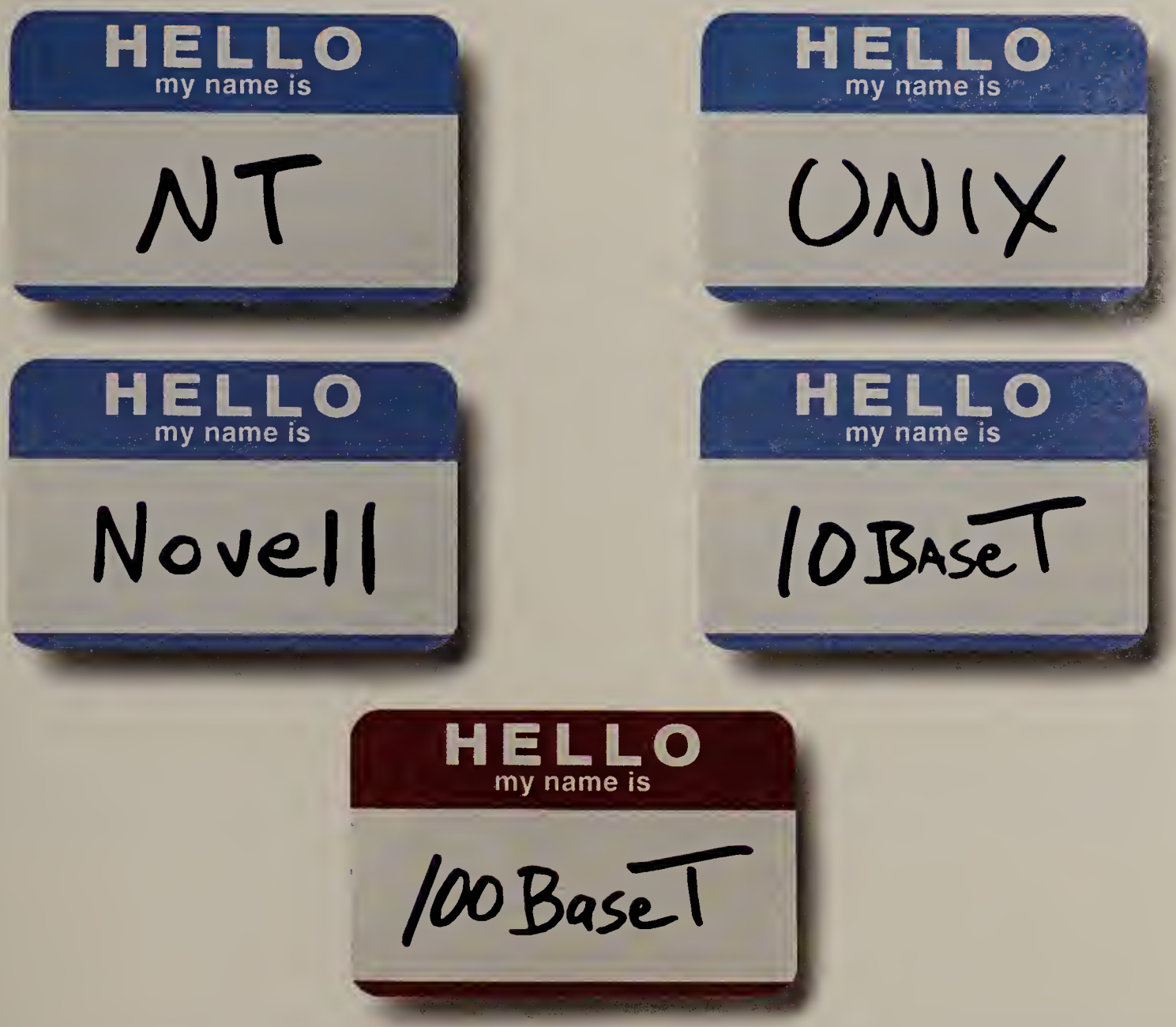

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Individual KMs are much like scripts, so setting up one requires some knowledge of the application to be monitored. For example, you have to establish table spaces and a Patrol account in your Oracle database before you can set up your Oracle KM. This shouldn't be too great a constraint, however, because some knowledge of the application is always required to do effective monitoring. Still EcoSCOPE, by contrast, only requires knowledge of the physical network.

Deployment issues

EcoSCOPE should be relatively simple to deploy, as long as you have an available workstation on every segment you want to monitor. The list of supported switching hubs is small, but you shouldn't have trouble supporting your network adapters, although we were surprised that Intel Corp.'s Ether Express Pro/10 was not on the list. One Single View station can evaluate all Super Monitors on the network, although it may be advantageous to segment your network to make the task more manageable.

Patrol is much easier to deploy because it requires only one computer for the console and that can be a workstation you're already using. The KMs and agents run on servers already in your network. This is more intrusive than EcoSCOPE but takes up little enough bandwidth to be worth the trade-off. Patrol supports a great number of applications.

Documentation

EcoSCOPE comes with two manuals, a Getting Started guide and a Using EcoSCOPE booklet. The screenshots in the former make the product straightforward to install and configure. The topical structure of the latter works very well. The big drawback of the EcoSCOPE documentation is that there isn't a simple, single-point explanation of how the Super Monitor and Single View tools work together. Some sort of topographical map would be helpful.

Patrol comes with a nearly overwhelming array of separate books. Fortunately, the installation manual and Getting Started guide are easy to find and provide navigational tools to the rest of the manuals geared toward the tasks you want to perform rather than the knowledge you want to gain. You may not know whether you need to know how to customize KMs, but you will know whether your job is deploying Patrol or developing new applications.

Summary

CompuWare's EcoSCOPE provides fewer options than BMC Software's Patrol, but the options are more useful. EcoSCOPE provides a more integrated database and more useful long-term report formats. Its only drawback is that it doesn't have an easy way to view only the most current data.

Patrol is less expensive to deploy and provides server control as well as monitoring opportunities, but it doesn't have the integrated results nor the long-term database of EcoSCOPE. ■

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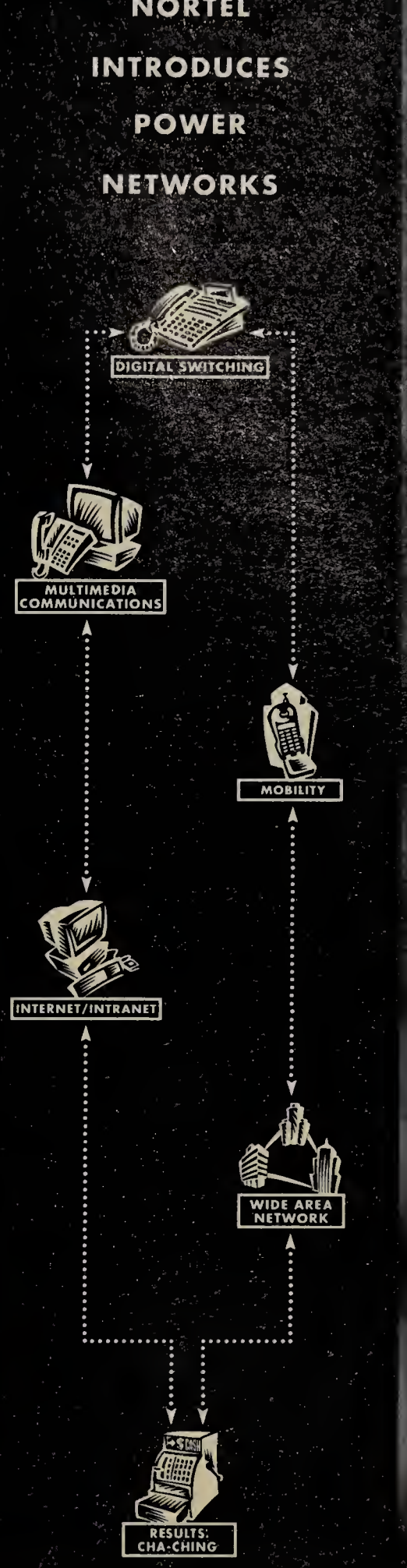

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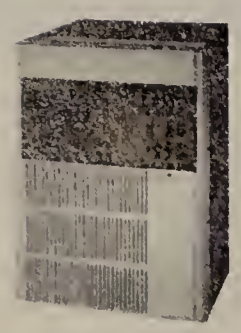

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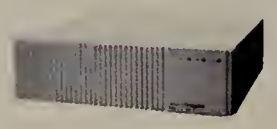

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Briefs

■ **Call Center University (CCU),** *an independent business unit of TCS Management Group, Inc., launched a Web site at* **www.callcenteru.com.** *CCU provides professional education and certification for call center personnel. Content still is being developed, but the site currently offers information about CCU's public symposium series and certification program, as well as articles on various call center topics. Plans are underway to add online registration for CCU's educational programs and online forums.*

✆ CCU: (615) 221-6850

■ **The Data Warehousing Institute (TDWI)** *has chosen the six winners of its* **1997 Awards for Best Practices in Data Warehousing:**

- *Data Extraction, Cleansing & Transformation: Owens & Minor*
- *The Warehouse & the Web: AT&T*
- *Very Large Data Warehouses: Fidelity Investments, Inc.*
- *Management & Organizational Issues: Eckerd Drug (formerly Thrift)*
- *Data Warehouse Applications: Federal Express*
- *Data Warehouse in Telecommunications: Concert Communications Services*

Each company gave a presentation at TDWI's Best Practices and Implementation Conference in Chicago last month. A one-page synopsis of each presentation is available from melinda@springbok.com.

✆ TDWI: (301) 947-3730

■ **Prosoft i-Net Solutions, Inc.,** *an Internet/intranet training company, along with workforce and leadership development consultancy* **The Salem Company** *opened a* **training center** *at Salem's corporate offices in Charlotte, N.C. The site has Pentium-based computer systems linked to the Internet. Prosoft's Internet training curriculum will help local companies migrate to 'Net technology.*

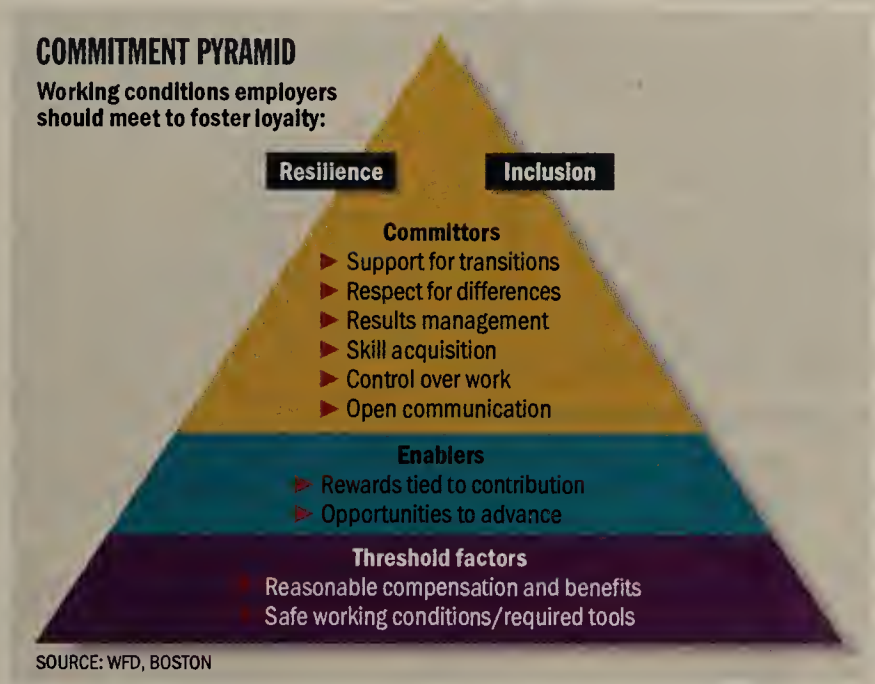
✆ Prosoft: (888) 776-7638

Loyalty in the workplace: Is it becoming extinct?

By Connie Sloane Brown

Now that corporate downsizing has left many workers with little sense of job security or loyalty, employers are finding that it takes a lot more than salary to hang on to their ranks.

There are basically three types of employees: those who will continue to work for one company whether they are happy or not; those who will always seek better career advancement opportunities and leave without any sense of guilt or disloyalty; and those who want to gain financial stability and grow with a company by using their skills to make significant contributions.



SOURCE: WFD, BOSTON

Jumping ship for smoother seas

Dave Foreman left his employer and position as a senior vice president of operations after 14 years of service to join the competition. Now an executive vice president for a technical training and development company in the St. Louis area, Foreman says the days of blind loyalty are gone.

When people like his father were loyal to a company for 30 years, it was because that was expected. Workers collected a gold watch, had a retirement party and lived off a moderate pension.

"Today, there is a new type of loyalty," Foreman says. "It's one that should be shared equally between the company and the individual." Foreman says his idea of a company that deserves loyalty is one that provides the challenge for an individual to create value, work on new market initiatives or products and make a direct impact. Loyalty is not gained by maintaining the status quo or improving financial performance by just cutting costs. He also emphasizes the importance of believing in the corporate vision and helping achieve it.

When Foreman first joined his previous employer, which he declines to name, he had plenty of challenges and opportunities to explore. Unfortunately, the company stagnated and underwent a series of mergers and acquisitions that shifted management to bean counters instead of technology and training professionals.

The corporate mission evolved to attaining a financial goal as opposed to a technological or strategic vision. This decreased morale and productivity and left employees such as Foreman feeling personally and professionally unfulfilled.

That's not the case for Floyd Stanley, who joined Wave Technologies, Inc. seven years ago and doesn't plan to leave any time soon. Shortly after starting work, Stanley was promoted to branch manager at the Dallas headquarters. This launched him into the position of vice president in just two years. Stanley traveled an average of 50,000 air miles per year conducting seminars but says it was well worth it.

He likes being able to exercise an entrepreneurial approach when doing his job. He also enjoys stock options that let employees see that their actions impact Wave's stock value.

"Many times, managers expect employees to have accountability without authority, or authority without accountability," Stanley says. "In either case, you find yourself swinging in the wind."

Stanley emphasizes the importance of providing continuous training and giving employees opportunities to improve. "It's more than giving the nice gold watch at retirement — it's offering a future that allows one to live comfortably during [the job] and after retirement," he says.

Although other opportunities have come his way since he's worked for Wave, Stanley says there haven't been any he would have considered. He plans to remain loyal to his employer.

Recipe for devotion

When management philosophies and values relate to people as individuals, companies will find it easier to retain valuable employees. Look at a company that cares about its employees' viewpoints and working environments and is in constant dialogue with its people, and you'll see an organization in which employees are more productive and loyal.

Companies that want to instill loyalty must eliminate the obstacles that serve to dampen enthusiasm and discourage contribution, according to Boston-based workforce consulting firm WFD, Inc. (formerly Work/Family Directions). WFD uses what it calls a "commitment pyramid" that builds on basic needs and outlines the conditions required to foster employee motivation and satisfaction (see graphic).

"If you want more than just a warm body at the desk, you need to build the kind of work environment that engenders creativity and people that want to go the extra mile," says Jackie Church, a WFD consultant in Boston.

WFD's research and corporate surveys have found that offering employees flexibility is the best way to build devoted ranks. "People want to lead a well-balanced life. They want to make a contribution at work, but at the same time have a life outside of work," Church says.

Other crucial needs include quality management, open communications and professional development.

As a manager, be receptive to employees' viewpoints and make them believe they are contributing as individuals, not just as numbers on the payroll. Give employees a variety of work, trust them to carry out high-impact, high-profile assignments and offer easy access to management.

Of course, recognizing and rewarding employees for their demonstrated achievements also does a lot to increase loyalty.

Loyalty to a company is like loyalty in a marriage — it's a two-way street. There must be a shared commitment and equal contribution to the success of that relationship. That means you don't leave during difficult times, you don't take for granted there always will be job security, and you make an honest effort to do the best you can. At the same time, it ought to mean reaping recognition and rewards from your employer for that effort.

Brown is a freelance writer in Virginia Beach, Va. She can be reached at Cbrown1737@aol.com or (757) 631-9379.

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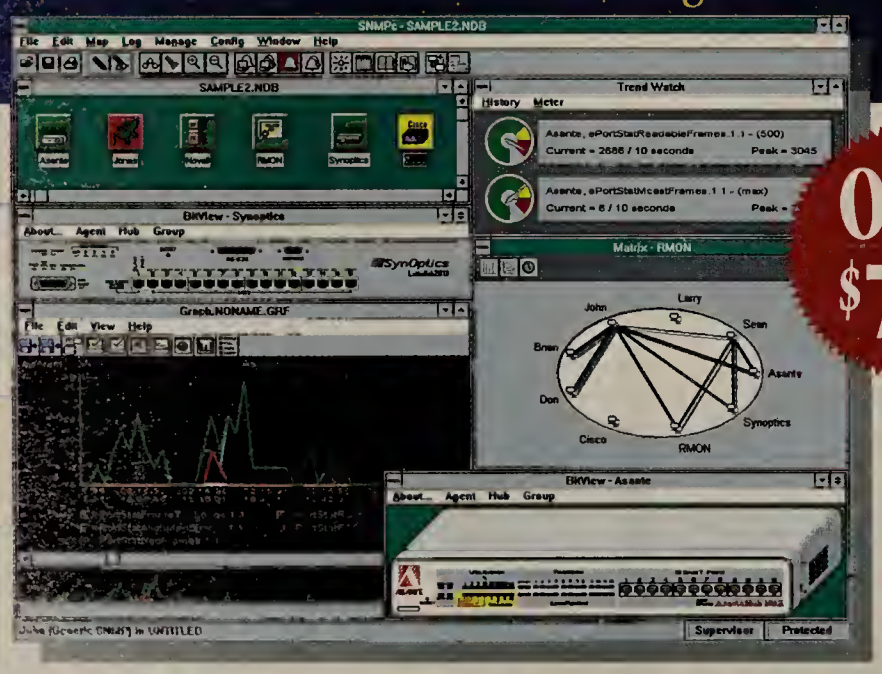

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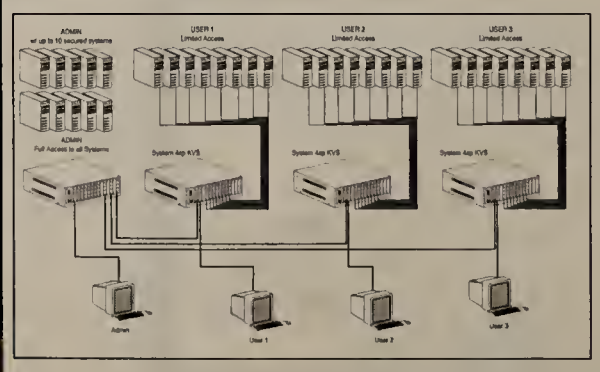

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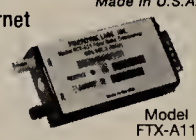

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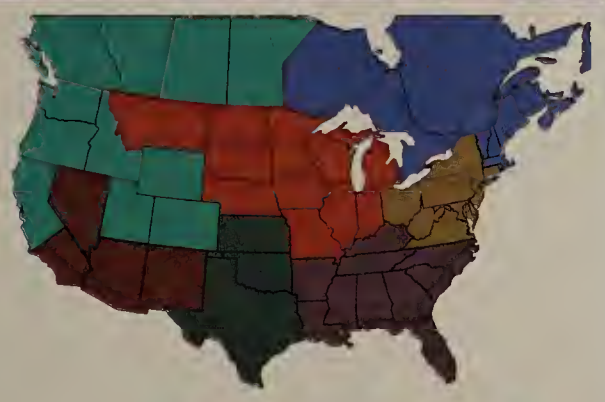

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*Indicates Regional/Demographic

DIRECTORY OF SERVICES

HP

Continued from page 1

Users said the new product and HP's service-level plans are a good start, but they want the whole enchilada. They want a Java-based front-end to OpenView as soon as possible; they also want specifics on how HP plans to integrate its newly acquired Prolin service management tools with OpenView, especially in light of users' significant investments in other service-oriented products.

"We want the full Java interface for Web access," said Paul Edmunds, senior network analyst at Duke Power Co. in Charlotte, N.C., and president of the OpenView Forum. HP promised a Java interface, but did not give a specific ship date.

A Web graphical user interface (GUI) written in Java will allow users to access OpenView from any system — laptop, PC or workstation — that can run a Web browser.

It will also provide users with a dynamic, extensible environment from which to manage their networks and systems.

HP is shipping a Web interface with OpenView Network Node Manager 5.0 and IT/Operations 4.0, but it is written to the Common Gateway Interface. CGI's hypertext tabular interface lacks the graphical device representation and real-time interaction of Java, features sorely needed by users as they scale their networks.

"We're more interested in the next phase of HP's Web-based management strategy," said Sandy Potter, network manager at Air Products and Chemicals, Inc. in Allentown, Pa.

HP will integrate Java and other Internet technologies into OpenView in phases, said Olivier Helleboid, general manager of HP's Network and Systems Management division. He did not say when the phases would be completed, but HP would like all OpenView products to have a Java-based user interface by mid-1998, said Bill Bonin, director of OpenView for Internet Computing.

The first phase was completed last week when HP announced Internet Service Manager, a new IT/Operations software product. The new product's link-auditing feature was written in Java, said Martin Fink, research and development program manager for HP's Network and Systems Management division. Internet Service Manager is shipping now and costs $795.

Some users, though, hope HP does not make OpenView's Web-based GUI too rich. HP demonstrated some Java-based prototype GUIs at last week's conference that some users thought might be too elegant. "It looks good in demos, but it also has some over-engineering to it," said Paul Seliga, principal engineer at Network Equipment Technologies, Inc.

Users also are eager to see how HP implements its recently acquired Prolin IT Service Manager software with OpenView. HP acquired the Amsterdam-based Prolin in April to put some teeth behind its service management initiative.

IT Service Manager is a suite of software applications for managing IT infrastructure and services. It includes help desk, change and configuration, and service-level management packages.

But the Prolin suite duplicates much of the functionality of Remedy Corp.'s Action Request System, a popular service management tool that has been used by OpenView shops for years.

"We're still struggling" with HP's service management initiative, said Deborah Follett, chief information officer at AT&T Solutions in Lincroft, N.J. "It forces you still to have a lot of intermediary systems for broad service visibility."

HP's Helleboid was vague on the company's plans for Prolin/OpenView integration. He did say that products such as OpenView Network Node Manager and IT/Operations would serve as data collectors for Prolin applications under the service management initiative. ■

ON THE DOCKET

HP's OpenView plans for the next year:

1997

- Out-of-the-box management of Oracle, Informix and SQL Server databases
- Management of Baan IV and Microsoft Exchange applications
- Internet Service Manager
- Mainframe management via Sterling's Solve: Operations
- PC COE desktop management
- CIM repository
- Renaming of Symantec products

1998

- Operational control and monitoring of Windows NT
- Windows NT network traffic analysis, change and configuration management
- Management of Sybase databases
- Management of Microsoft BackOffice and PeopleSoft applications

CRM

Continued from page 1

environment, McCormack said. CRM is also Cisco's first server-based product that is entirely Web-based, McCormack said, alluding to future Web-based management tools. Other details on that architecture were not forthcoming.

CRM's Web-based management capabilities are promising because they let users manage complex router environments from a simple, inexpensive, easy-to-use Web browser. Web browsers also run on multiple plat- forms, so users would no longer have to depend on Unix-based workstations as they do in the OpenView environment and other industry-leading management platforms.

As a founding member of the Web-based Enterprise Management consortium, Cisco is a vocal proponent of using Internet technologies for network management. Microsoft Corp., Intel Corp., BMC Software, Inc. and Compaq Computer Corp. are all part of the consortium that is developing standard ways of deploying Web-based management products.

CRM resides on Solaris and Windows NT-based Web servers. From a Web browser, a user can invoke CRM by typing in a URL to load the product's HTML page.

From there, hotlinked commands allow the user to access inventory, software and availability data from IOS agents that support HTTP on Cisco routers and switches.

CRM also can launch Java applets for more real-time interaction with Cisco devices and enhanced graphical representation.

The inventory application within CRM keeps tabs on the type and configuration of Cisco devices in the network. The software image manager allows users to determine the version of IOS running on the devices and load or update a version.

"If it is a browser-based tool that lets you see what's up and what's down in the network, that would be great. That's our No. 1 priority," said Cisco user Roy Hegge, senior network engineer at ADC Telecommunications, Inc. in Minneapolis. "I'd love something like that."

Hegge said he has held off installing Cisco's existing CiscoWorks device management tools because they seemed to be a conglomeration of packages with limited functionality. Also, the Unix-based CiscoWorks required X Window access, Hegge said, which can drain performance.

Web-based access is a much cleaner way to get at things, Hegge said.

Though CRM is most complementary with CiscoWorks, Cisco will offer CiscoWorks users an upgrade path to the Web-based suite, McCormack said.

Cisco also will promote use of CRM through coupons for CiscoWorks users and 60-day evaluations of the product that can be downloaded from the Web, he said.

"They're extending beyond the scope of [existing] Web tools that just report network usage metrics," said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo. "Adding things like inventory and software image management is a good next step. And as long as they've got Java, they're going in the right direction."

CRM is currently undergoing beta testing. ■

HP out to manage desktops

In an effort to establish a foothold in desktop management, Hewlett-Packard Co. this fall will ship a set of software tools for managing PCs.

Developed and deployed inside HP, PC Common Operating Environment (PC COE) software has helped HP save $200 million annually over the past five years by automating software distribution and configuration among its 120,000 desktop systems. PC COE is designed to decrease the overall cost of ownership for PCs by easing software licensing, distribution, installation and inventory tracking.

Administration of a single desktop costs about $400 per month, HP said, quoting a Gartner Group, Inc. cost-of-ownership survey. HP claims PC COE will reduce this amount to $170 per desktop.

PC COE can reduce monthlong, company-wide software deployments to days and cut software installations from one hour to six minutes, HP claimed. Internal experience with PC COE has given HP enough confidence to commercialize the product, said Olivier Helleboid, general manager of HP's Network and Systems Management division.

Until now, HP has been barely visible in the desktop management arena.

While it has made occasional contributions to desktop management technology through participation in the Desktop Management Task Force, it has virtually conceeded the market to rival IBM/Tivoli.

PC COE runs on Unix and Windows NT clients and servers and on mobile computers. In addition to distributing and installing software, PC COE tracks hardware and software inventory and monitors enterprisewide software licenses.

PC COE will be a separately orderable product under the OpenView management family umbrella. Pricing has not been determined yet.

–Jim Duffy

Array

Continued from page 1

nating on the public phone network to cross over to the Internet, thus avoiding long-distance charges from carriers.

But delivering the call at the far end requires dumping it back into the local phone grid, requiring the use of a second gateway. Most companies would find it expensive and impractical to install devices around the world, said Stuart Berkowitz, Array Telecom president and CEO. So the Telegate system makes it possible to barter gateway usage, he said.

For example, a company in New York that makes 1,000 minutes of international calls each month could maintain one gateway and rely on other companies' remote gateways for delivery of those calls. In return, its gateway would pass up to 1,000 minutes of overseas calls into the New York grid (see graphic).

Telephone companies use a modified barter method when negotiating connection agreements with telcos in other countries, Berkowitz said. But those arrangements — known in the industry as "net settlements" — involve rate negotiations, contracts, bookkeeping and cash payments.

"Logistically, that's a nightmare," Berkowitz said. "We've implemented a cooperation method based on trust that avoids all that."

Array, which launched Telegate on May 1, already has customers operating gateways in many cities in Asia, Europe and North America.

The Windows NT 4.0-based Telegate runs on a 120-MHz Pentium PC server outfitted with a two-line interface board for connecting the device to your PBX. Software licenses allow anywhere from two to eight lines at $1,250 per line.

Once the system is configured, customers can dial as they normally would. International calls are routed to the gateway, which then connects to Array's directory server in Ontario. The server passes back the location of a gateway near the destination called, and the originating box compresses the call to 6K to 8K bit/sec using a patented technique and routes it over the 'Net. The target gateway decompresses the call and sends it back to the local public phone system.

The initiating customer's server automatically "pays" the target server in encrypted tokens representing calling minutes. The software tracks the amount of minutes used and given to other companies on the network.

Bob Burrows, Array's vice president of sales and marketing, said the voice quality is generally good, though some delays can be detected. "It's like talking on a speakerphone," he said.

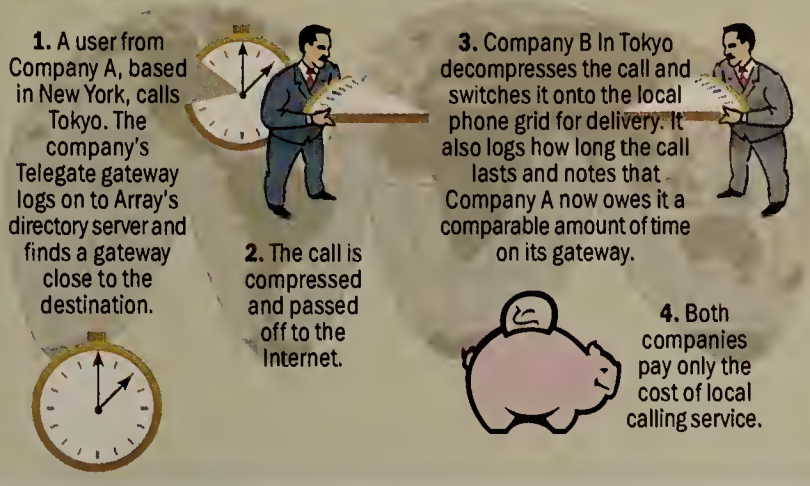
Jeff Pulver, an independent analyst based in Great Neck, N.Y., who studies IP/telephony issues, said he tried the Telegate system a few months ago on a call from Toronto to Tokyo.

"It sounded better than the Centrex calls I used to listen to when I worked on Wall Street," Pulver said.

Array Telecom is a subsidiary of Toronto-based Array Systems Computing, Inc. Its Web site is at www.telecom.array.ca. ■

'NET TELEPHONY BARTERING

Array's Telegate gateway for IP telephony is based on a barter system in which users swap usage of their respective gateways. Here's how it works:



Bay

Continued from page 1

to meet our product objectives. As a result, we can not only get an early lead in offering Gigabit Ethernet to our customers, but [also] deliver a central component of our new Adaptive Networking switching strategy. As a bonus, they have the strongest [management and engineering] team of all the start-ups.

Some observers thought Rapid City had a decent chance of making it alone. Why did you choose to be acquired?

Kennedy: As strong as our team is, there would have been a lot of uncertainty between now and doing an IPO (Initial Public Offering). Currently, I don't mind competing with the Big Four [internetwork companies], and I relish competing with the two or three other relevant start-ups. But I would not be all that keen on competing with Bay's sales force and channel [if Bay had gone ahead and acquired a competing start-up instead of us]. If Bay was going to do an acquisition, I wanted it to be us.

Cisco acquired Granite last summer for about $220 million, yet Granite was not nearly as far along with products as Rapid City is now. Could you have done better on price?

Kennedy: (laughs) Well, let me put it this way: I expect Bay will get a lot more bang for its buck than Cisco did with Granite. Also, the upside for Rapid City shareholders is significant, given that the new management team at Bay is looking strong.

How quickly will Bay start delivering Rapid City products?

House: The FIRST 1200 [high-end backbone chassis] will ship in the fourth quarter [as opposed to Rapid City's original summer ship date].

How will Rapid City's gear fit in with Bay's product line? Specifically, what does this mean to Bay customers?

House: Break the market into two pieces: those customers pursuing a cell-based backbone and those pursuing frames. The acquisition rounds out our frame-based line. It is already well-known that Bay has a complete line of products for ATM campus backbones, and our market share is the best evidence of that. For those customers building frame-based networks, we have a great lineup for the wiring closet. The latest introduction is our 350T 10/100M bit/sec Ethernet autosensing switch. Rapid City's FIRST 1200 is the perfect complement as the frame-based network center box. The F1200 not only has the raw bandwidth required to handle high-density 10/100M or Gigabit Ethernet, but it is a routing switch fitting perfectly in line with our Adaptive Networking strategy.

When will Bay's Optivity management platform span both vendors' product lines?

House: We will deliver Optivity support at first customer ship [in the fourth quarter].

How will the acquisition position Bay against competitors like 3Com and Cisco?

House: Rapid City brings us three key ingredients critical for building next-generation enterprise networks: high-density 10/100M bit/sec Ethernet switching, Gigabit Ethernet and routing switch technology. None of our competitors have a Layer 2/Layer 3 high-density 10/100/1000M bit/sec Ethernet switch on the market. Equally important, none of our competitors have routing switch technology. Routing switch technology allows customers to migrate to IP-optimized networks with simplicity. Our competitors are pursuing proprietary schemes [such as 3Com's FastIP and Cisco's Tag Switching and CiscoFusion] that add complexity, new protocols and vendor lock-ins. ■

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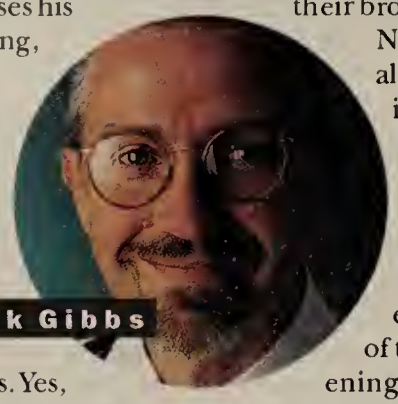
Backspin

"Stand and deliver!" – The eternal cry of the highwaymen

Act 1

An 18th century coach pulled by four magnificent horses races across the dales of Yorkshire, England, on a cold, damp June morning.

Suddenly, just ahead of the team, two caped figures step out from behind a stunted tree. One of them raises his pistol and aims at the oncoming, corpulent coachman.



Mark Gibbs

"Stand and deliver!" cries the pistol-wielding highwayman. "Your money or your life."

Ah, those glamorous and romantic days of old. Highwaymen, damsels in distress and the lash of the cat-o'-nine-tails. Yes, indeed. Those were the days when men were men and women were glad of it.

Act 2

Now, on the Internet, most of the romantic themes we have concern ridiculous images of hackers and crackers. But hold hard — as they used to say in days of yore — there's some of that romance around today: Highwaymen on the 'Net!

"Stand and deliver a lot of money, for I have found a bitchin' bug in your browser."

On June 13, Netscape was thundering down the information highway when out from behind a badly rendered B-tree virtually stepped a highwayman, one Christian Orellana, a consultant for Cabocomm, a company near Copenhagen, Denmark.

"Stand and deliver a lot of money, for I have found a bitchin' bug in your browser" was his message — I paraphrase, of course. "If you don't pony up the big dollars, I shall tell the world, and then CNN or someone else will hopefully pay me."

"Nothing doing," replied Netscape. "We pay $1,000 U.S. for security bugs that people find and that's it." And it was.

Act 3

If you want to follow what happened in detail, read the story and a copy of the e-mail messages involved on the *Wired* site (www.wired.com/news/topframe/4449.html). You can find Orellana's own, rather badly edited version on Cabocomm's site (www.cabocomm.dk).

The bug Orellana found allowed a server to read any file on a PC running Navigator — for example, the Windows registry. Obviously, this was not the kind of security problem users would like on their systems and in their browsers.

Now what should we make of all this? Well, the $1,000 bounty is Netscape's publicly offered reward for security bugs found in its products. Orellana, by demanding a large amount of money (unspecified in all reports, but apparently something far in excess of the bug bounty) and threatening exposure if he wasn't paid, was attempting extortion.

Act 4

What is even more interesting about Orellana's extortion attempt is that it exposes a common conception that information is power. The statement, put that way, is not actually wrong; rather, it is incomplete.

In Orellana's case, he thought the information he had was worth more than the value stated by Netscape. But he failed to understand the market forces surrounding the information. He failed to understand that *information with context is power.* Without context, information is really only data.

Orellana thought he understood the environment in which the exposure of the bug would be valuable. The context he assumed to exist did not. Netscape was smart enough to realize that they couldn't benefit by keeping the bug secret.

The issue of context is the subtle heart of the information society. In our online culture, there exists not only the ultimate free market economy in traditional economic terms, but also in the economy of ideas.

And part of that economy, surprisingly, appears to favor pragmatic, ethical behavior because our actions are so exposed. Secrets are harder to keep, and pricing models based on hiding information and artificial market barriers just don't survive.

On the information highway, while no one may know you're a dog, they will know you're a highwayman.

So, was Orellana behaving in the spirit of the new online economy or acting like a two-bit hood trying to shake down Macy's? Give me your judgment at nwcolumn@gibbs.com or call (800) 622-1108, Ext. 504.

'Net Buzz

The latest on the Internet/Intranet industry

By Chris Nerney

BUYING A T-1 TO INVESTMENT HEAVEN **"Angel" investors** play a crucial role in the world of start-ups, filling a funding niche for cash-hungry companies that falls somewhere between panhandling and selling out to a giant megaconglomerate investment bank.

Angels typically are wealthy individuals with a desire to make more money through successful investments — which, if not quite celestial, is the next best thing. Being mortal, however, these angels often have trouble finding the kinds of companies in which they want to invest.

Now an Internet-based listing and information service says it has created an online investment heaven where individual angel investors can learn about and interact with growing companies looking for $250,000 to $5 million in equity financing.

The **Private Capital Clearinghouse, Inc. (PriCap)** site is designed as a clearinghouse and meeting place where investors can learn about and compare investment opportunities. CEO **Charles Richards** says PriCap will offer detailed information about start-up companies and their competitive markets.

PriCap also promises to act as a middleman, putting involved parties in touch with accountants and — against our advice — lawyers who can help make a deal work.

The site (www.pricap.com) will open for business on July 4, though companies and investors can enroll for membership now. Investor services cost from $200 to $1,000 for a six-month period. U.S. companies will be charged a $150 membership fee and $500 per six-month listing.

NO ANGELS NEEDED HERE Start-up **Allaire Corp.** — creator of the Cold Fusion Web development tool — soon will announce a $9.3 million venture capital agreement.

Lead investors in Allaire's second round of financing are **Polaris Venture Partners** and **BancBoston Ventures, Inc.** Polaris spearheaded Allaire's initial financing round last year with a $2.5 million deal.

The Cambridge, Mass.-based start-up also announced it has hired former **Lotus** and **Nets, Inc.** exec **Barbara Baird** as vice president of marketing.

From the Laying a Ghost to Rest Department: We feel compelled to confess that when we first wrote about the company a few months ago, we botched the spelling of founder **J.J. Allaire's** alma mater. It's **Macalester College** in St. Paul, Minn.

HEADED FOR THE IPO LAND, MAYBE After months of delaying its plunge into the chilly Internet IPO market, **Digital Equipment Corp.'s** search engine subsidiary, **AltaVista Internet Software, Inc.** of Littleton, Mass., may be walking toward the diving board.

The company filed a $50 million IPO last August, but has been keeping a low profile since. CEO **Ilene Lang** says she and other AltaVista executives don't want to sell stock until the company becomes profitable — which hasn't happened yet.

However, Lang predicts AltaVista will move into the black by year-end.

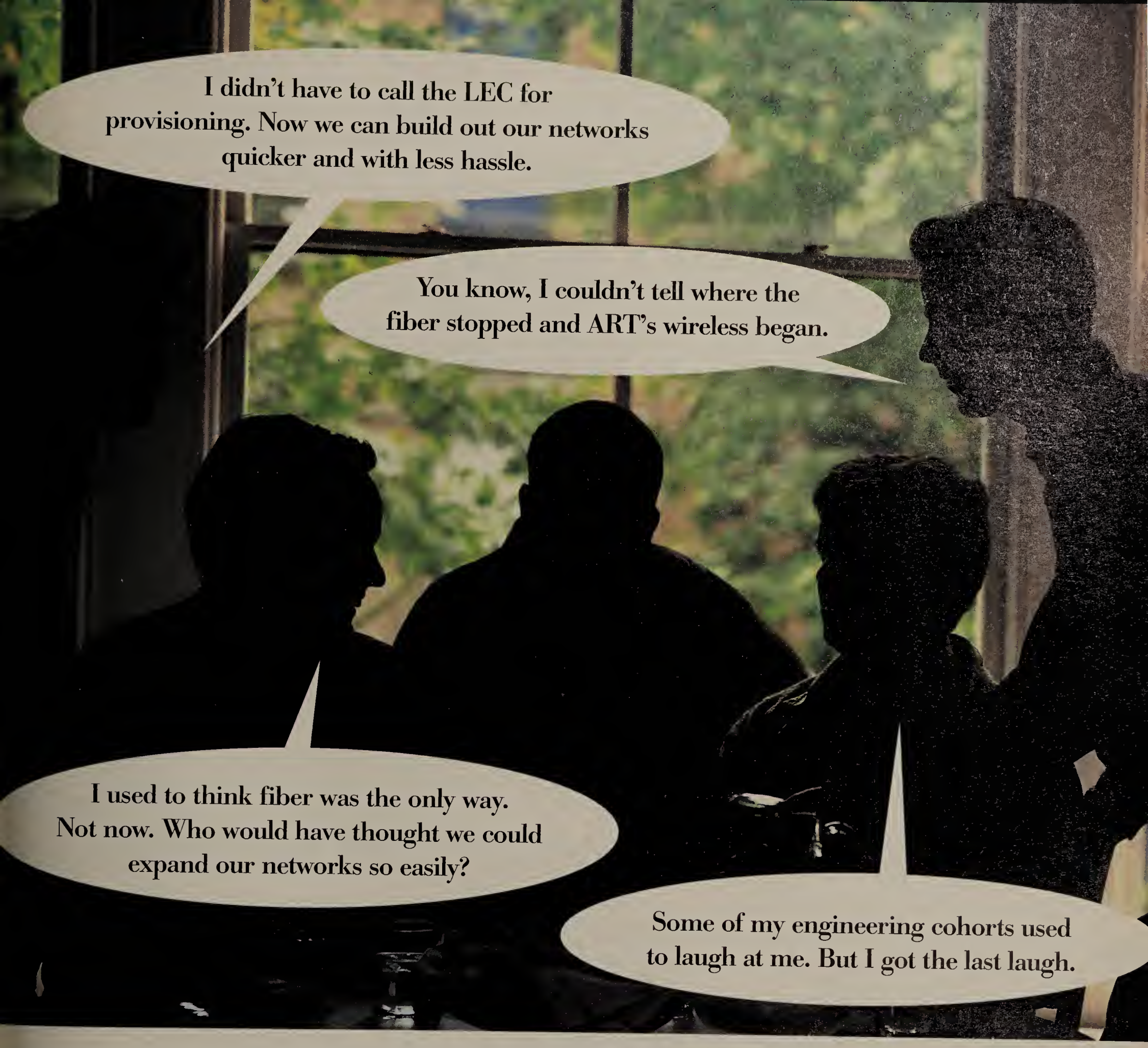
THE UNKINDEST SPAM OF ALL Members of the **Coalition Against Unsolicited Commercial Email (CAUCE)** are smarting over a recent mass electronic mailing sent under the group's name.

The forged e-mail's text was taken from CAUCE's home page and modified slightly, to CAUCE's disadvantage. The forger makes a pitch for CAUCE's antispamming effort, devilishly promising that by paying to join CAUCE, "you will receive MORE SPAM via e-mail." Those cutups!

CAUCE calls the forgery — a little hyperbolically, if you ask us — "yet another example of the unscrupulous and irresponsible behavior" of pro-spammers.

The coalition is pushing a law that would ban junk e-mail.

'Net Buzz needs angels to give it some hot Internet and intranet news. Contact Chris Nerney at cnerney@nuw.com or (508) 820-7451.



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